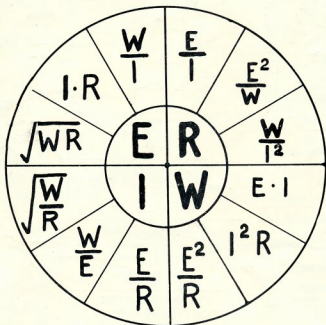


AMATEUR RADIO

JULY 1965



Vol. 33, No. 7



2/6

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OUR COVER

Featured on the front cover is a
chart showing voltage, resistance,
current and power formulae.

FEDERAL COMMENT

★

RECIPROCAL LICENSING

The April 1965 issue of the R.S.G.B. Bulletin, both on its front cover
and on the editorial page, featured with justifiable pride an official state-
ment that the British Government would grant Amateur transmitting
facilities to overseas Amateurs whose governments were prepared to enter
into reciprocal licensing agreements.

For some years it has been the policy of this Institute to obtain similar
concessions for overseas Amateurs coming into Australia no matter what
the proposed period of their stay here.

To some extent this end has been achieved in that U.K. Amateurs
emigrating to Australia have found the acquisition of a VK licence a
simple matter, in many cases the examination requirement being waived.

Certain other nationals, mostly American, visiting this country have
been granted temporary VK call signs whilst here.

It is pleasing to be able to report that the matter of full reciprocal
licensing is now being negotiated between Australia and the United States
of America. Such negotiations are, of course, the prerogative of the
Foreign Affairs Departments of the two countries and some time may
elapse before the agreement is formally ratified.

In the meanwhile we can confidently look forward to the time when
we—like our English cousins—can report in "Federal Comment" that the
first milestone on our journey towards universal reciprocal licensing has
been passed.

Harold L. Hepburn, Federal Vice-President.

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THE MONASH MODULATOR

KEN GREEN,* VK3KG

I WAS interested to read the article by VK6ZDB in March "A.R." relating his experiences with the transistorised modulator circuit originally published in "Mullard Outlook" and in "A.R." Perhaps VK6ZDB and others concerned with mobile a.m. would like to hear of some modifications which have been made to this circuit with gratifying results.

Three of these modulators have been built, in each case plate-modulating a single 807, for use in rural fire trucks. Because it is advisable to avoid the use of crystal and carbon microphones in this application, these rigs employ a two-inch permag. speaker as a dynamic mike working into two OC71 type transistor stages, the second of which operates as an emitter-follower to provide a fairly good match into the 50 ohm primary of the A. & R. driving transformer. The early material published on this circuit emphasised the danger of allowing the output transistors to work into an open-circuit load. The possibility of this occurring on modulation peaks was prevented by the addition of a 22 volt 1 watt zener diode as a clamp between each output collector and the earthed 12 volt positive supply line.

Probably Lady Luck has smiled in our direction, for VK6ZDB's trouble of transistor converter hash invading low level audio stages has never raised its ugly head. The power supplies in these mobile fire brigade units are in separate metal cases, and are sufficiently filtered to suppress the 800 cycle transistor switching frequency and the 1800 cycle ripple in output from the rectifiers.

Round about the time when I decided that the speech quality in these units was a bit harsh, and the audio stages were inclining towards a deplorable state of intermittent instability (noticed particularly when the adjacent 807 was producing r.f.), a handsome offer was made by Mr. Richard Kellett, the Bod-in-charge of the Electronics Lab. in the Dept. of Physiology at Monash University, to "bring it over and see what it was doing". With £2200 worth of double beam c.r.o. fitted with differential amplifiers on each beam chain, the input terminals on one set of vertical deflection amplifiers were connected across a 40 watt 7000 ohm resistor as modulation transformer secondary load, so that the displayed pattern showed at once the effect of any change in circuit constants or operating conditions. The other beam was used to monitor the signal waveform at various points between the microphone input terminals and the collectors of the output transistors.

A drop in distortion was noticed as soon as the collectors of the first two stages were operated from a 9 volt zener supply, this providing a better degree of isolation between stages than any CR de-coupling combination.

However, the modification that really registered an outstanding improvement in stability, and giving a lift in overall gain at the same time, was the removal of the resistor and bypass capacitor from the emitter lead of the emitter-follower Q2, and the substitution of a 5.8 volt zener to fix the d.c. emitter potential. The extra gain permitted the removal of the emitter bypass capacitor in the input stage, the added negative feedback resulting in a further small improvement in performance. The 1200 ohm resistor feeds a small current from the 12 volt negative supply rail to the 5.8 volt zener to ensure that the latter is operating well into the zener region, and not popping in and out of stabilisation around the knee of the curve on voice peaks. Hooray for that c.r.o.!

The final change in the circuit was the addition of a few ohms in series with one of the 47 ohm collector resistors to bring the two OC74 collectors to exactly the same potential in the no-signal condition. This d.c. balancing would be familiar to anyone who has built a Williamson amplifier. This added resistance in one leg is obviously cut-and-try for each set of transistors; the biggest added value I have ever used is 4 ohms.

As a trial measure, next the OC74 bias current was increased temporarily to bring the output transistors into the Class AB operating region, but as the increased temperature in the output-transistor heat sinks was not accom-

panied by any remarkable performance improvement, the bottom leg of the base voltage divider was changed back to the 10 ohms shown in the circuit diagram. After cycling the 12 volt supply between 9 and 16 volts, with no ill effects, the job was considered complete, and "on-the-air" the received speech quality now compares favourably with other similar mobile rigs using valve modulators.

The frequency response is flat from 150 cycles to almost 7 Kc., this figure almost certainly being slightly degraded by the use of this particular type of speaker-mike.

With the power supply set to 12.4 volts the output audio across the 7000 ohm load goes to 800 volts peak-to-peak with slightly more than normal speaking level, with the 22 volt zeners starting to clip just below this figure. (With an audio oscillator as signal source the peak-to-peak output was run up above 1100 volts without damaging anything. Naturally a sustained input signal from an oscillator produces much more heat in the sinks than the rise and fall of speech from a mike.) The distortion level with sine wave input appears to be in the vicinity of 6% or 7%.

In closing I must acknowledge a debt of gratitude. Again, many thanks, Dick, for your interest and participation in this project, especially in view of the fact that you gave freely two half days of your holiday to open up the University Lab.

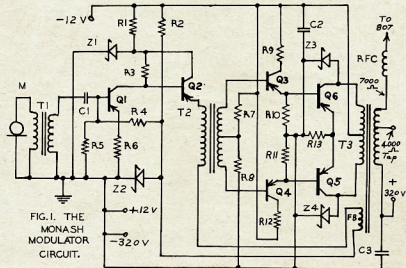


FIG. 1. THE MONASH MODULATOR CIRCUIT.

- | | | |
|----------------------------|---------------|-----------------|
| C1-10 JFD | T2-A&R 1T 631 | R3-4700Ω |
| C2-2000 JFD 18V | T3-A&R MT 26 | R4-22 KΩ |
| C3-24 JFD 600V | Q1-Q2-OC71 | R6-470Ω |
| Z1-9V 1W ZENER 1Z9T10 | Q3-Q4-OC84 | R7-330Ω |
| Z2-5.8V 1W ZENER 1Z6T10 | Q5-Q6-AT138A | R8-10Ω |
| Z3-Z4-22V 1W ZENER 1Z22T10 | R9-R12-47Ω | R10-R11-220Ω |
| M-2" PERMAG 3.5L | R1-150Ω | R13-0.4Ω 10 AMP |
| T1-A&R TO3 OR ROLA LTR10 | R2-R5-1200Ω | |

*Communications Officer, Diamond Creek Fire Brigade, Vic.

JUNKBOX 2 METRE COMMUNICATOR

W. E. J. ROPER,* VK3ARZ

THE small mobile portable rig to be described in this article makes no pretence to be the ultimate in v.h.f. emergency equipment. But it may provide an answer for those Amateurs who have always wanted to operate mobile or portable on the v.h.f. bands, but have considered that the high cost of power supply components and maybe the small 6 volt battery in the family car are difficult obstacles to overcome.

This unit operates from a standard 200 volt 60 mA. vibrator supply and, despite the 15 tubes, consumes no more than 5.5 amps. from a 6 volt battery, therefore enabling several hours of operation from a stationary portable location.

Controlled carrier modulation is used and the input to the final on voice peaks is 4.5 watts. If a 250 volt supply is used the input could be up to 6.5 watts on voice peaks without exceeding the 60 mA. rating of the supply. This power may seem to be low but under reasonable conditions, several S9 reports have been received over distances of 100 to 200 miles when operating portable in conjunction with a four element beam. Under mobile conditions using a halo-antenna, many good reports have been received up to 20 miles and from high spots, up to 50 miles.

The transmitter, which is the main subject of this article, was designed to work in conjunction with an SCR522 receiver. It actually fits inside the receiver in the space from where the squelch and audio components have been removed and makes a compact rig which can easily be mounted in all but the smallest cars.

The transmitter would be a good companion to the common 2-metre converter-car radio combination, with the power borrowed from the car radio supply.

The SCR522 receiver is far from optimum as a receiver, but—beggars cannot be choosers. In practice the sensitivity is adequate, but the selectivity is rather poor.

The transmitter and modulator are built up on a standard, commercially available 6 in. x 4 in. x 2 in. aluminium chassis. The r.f. lineup is quite standard except that the 5763 is not the most efficient tube that may be used in the final. It was used because a couple of spares from the home transmitter were available.

A 12AT7 is employed in a conventional overtone oscillator circuit to obtain 24 Mc. output from an 8 Mc. crystal, and triples to 72 Mc. in the second section of the tube. Coil dimensions are given in the table and the 3-30 pF. concentric trimmers used in several of the tuned circuits are mounted above the chassis to enable ease of tuning when the transmitter is mounted in the SCR522 receiver, and also to prevent crowding of components under the chassis.

The next stage is a 6C4 doubler to 144 Mc. This tube was chosen because of its low filament current drain of 150 mA. and should provide 1 mA. of grid drive to the final, although the 5763 was found to work quite satisfactorily with as little as 500 microamp. drive. If difficulty is found in providing sufficient drive, a 12AT7 may be used with both sections tied in parallel at the expense of several milliamps. of h.t. and 150 mA. of 6 volts.

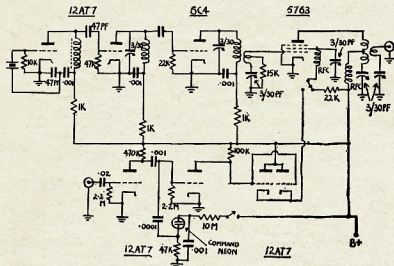
The 5763 final is mounted with the socket suspended sufficiently far below the chassis so that the top of the tube projects no higher than the other tubes.

Series tuning of both grid and plate circuits is used, and the plate tank circuit may be mounted either on top of the chassis or below, whichever is most convenient for tuning purposes.

They certainly provide the most output and quality for the cheapest price.

A gain control was considered unnecessary and the quality of modulation is governed by the distance of the mike from the mouth.

The r.f. section of the transmitter is tuned up with the tuneup switch S1 in the position that places screen voltage on the 5763 through the normal screen dropping resistor. The screen voltage will be about 150 volts. When tuning is completed, S1 is put to the modulation position, and the screen voltage should drop to about 50 volts, and the input to the final will also drop to almost half. By talking into the microphone it will be noticed that the input to the final, and the screen voltage, will kick up to about the original values on voice peaks. The value of R1 determines the stand-



The 5763 needs neutralising in either case, and this is quite simply accomplished with the screen grid method indicated in the circuit diagram.

The antenna coupling link is closely coupled to the centre of the final tank and is tuned with a series 3-30 pF. trimmer.

The secret of the modulation system to be described, like all efficiency types of modulation, is that the final be loaded as heavily as possible.

The modulator circuit is straight forward and is about as simple as you can get. No special precautions need be taken with the construction. A miniature transistor radio earphone plug and jack are used as microphone connectors for the crystal microphone which is a disposals insert mounted in a small adhesive-tape tin. Crystal microphones are not optimum for mobile operation for obvious reasons, but one has been in use here for some considerable time without any trouble.

ing input without speech and some experiment with its value may be worthwhile. Optimum results here were obtained with the 100K indicated in the circuit diagram, but this could be increased to 500K. It will soon be found that after about 90% modulation is reached, speaking louder into the microphone will not increase the level of modulation but will tend to clip or distort on voice peaks.

The tone oscillator is a simple but effective unit based around a neon diode salvaged from a "Command." Operation is controlled by a micro-switch which is mounted in such a position that it can be keyed for m.c.w. if necessary.

I will not attempt to fully detail the modifications made to the SCR522 receiver because there are many excellent articles available on various conversions of this unit. The tuning was band spread by pulling out all the plates in the tuning condensers except

* Lot 59, Orchard St., Mt. Waverley, Vic.

one rotor and two double spaced stators in each section and new coils were installed. Single control tuning was obtained by ganging the two condenser shapes together with some dial cord and a spring, and a vernier drive was mounted on the oscillator condenser shaft.

The i.f. stages are standard except that 6SS7's are used because of their low filament current consumption of 150 mA. each, and the second stage had controlled regeneration added to help with selectivity. A 6H6 is used as a combination diode detector, simple a.v.c. rectifier and series noise limiter,

a 6SS7 as a pentode audio amplifier driving a 6AM5 in the output. This excellent tube delivers sufficient output and consumes only 19 mA. of h.t. and 200 mA. of filament current at 6 volts.

A small 5 in. speaker was mounted behind the front panel, a disposals meter and shunts added to measure battery volts, h.t. voltage, and final plate current, and the front panel was dressed up with some scrap expanded aluminium, some vynex and indicator labels.

A separate switch is used to control the filament voltage to the transmitter, so that when using the receiver section only, such as in fox hunts, there is no unnecessary drain from the battery. A standard wafer switch is used as a T/R switch, and in the transmit position, h.t. voltage is left on the receiver oscillator to minimise drift. Also, in a third position, the transmitter oscillator only is switched on to allow checking of frequency in relation to other signals on the band.

The antennas are fed with 72 ohm co-axial available cheaply through disposals.

This outfit is also quite adequate for low power home station use and at this location runs entirely from the home station converter power supply.

It can be seen that there is ample scope for variation to this transmitter. For 6 metre operation the 6C4 would be omitted and the 5763, which is more efficient at this frequency can then be run at higher input.

If 100 to 150 mA. is available from the power supply, a 6QZ03/12 may be used in the final with inputs up to 18 watts on voice peaks.

COIL DATA

12AT7 Plate, 24 meg.: 20 turns 20 s.w.g. enamel on $\frac{1}{2}$ " dia. slug tuned former.

12AT7 Plate, 72 meg.: 4 turns 20 s.w.g. enamel on $\frac{1}{2}$ " dia. spaced twice wire diameter.

6C4 Plate: 2 turns 20 s.w.g. enamel on $\frac{1}{2}$ " dia. spaced twice wire diameter.

5763 Grid: 4 turns 20 s.w.g. enamel on $\frac{1}{2}$ " dia. spaced twice wire diameter. Centre tapped.

5763 Plate: 4 turns 14 s.w.g. enamel $\frac{3}{4}$ " dia. spaced wire diameter.

Antenna Coupling: 2 turns insulated wire interwound at centre of P.A. tank coil.

The keen experimenter should have no difficulty in building up a tuneable i.f. channel and crystal locked converter on a similar sized chassis to the transmitter to make a very compact but efficient station.



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MINI-HALO AERIALS FOR MOBILE*

ON TWO AND FOUR METRES—DESIGN, CONSTRUCTION AND ADJUSTMENT

E. POSTANS, G4AC

WHAT the writer considers to be a highly effective, inexpensive, easy-to-build (though perhaps a trifle tricky to adjust) lightweight aerial, producing an almost completely circular horizontally polarised pattern for 2-metre mobile operation (similarly four metres when appropriately scaled to that band) is described in this article. Because the majority of fixed stations (possibly /M, too) operate horizontal polarisation on v.h.f., that plane was

In the belief that no aerial can radiate better than almost equally in all directions without forfeit of some other quality, it seemed that a maximum average radiation intensity through 360 degrees, consistent with minimum null levels, might well become an acceptable guide to final choice for the diameter.

Subsequent testing of these aerials, fixed and mobile, over the 20 odd miles between G4AC, Woodbridge, and

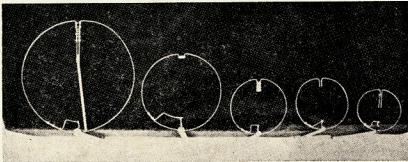
G3FIJ, Colchester, tended to support this view; the optimum diameter proving to be around 8 inches. The 6- and 12-inch types produced about equal carrier levels at the receiver, but, whereas the 12-inch displayed two relatively deep nulls, the 6-inch and 8-inch produced but one insignificant null. In every case the s.w.r. was approximately 1.1 to 1.

Since the autumn of 1953, when these anti-flutter-cum-non-directional experiments commenced, very many /M-to-fixed station and vice versa tests have been conducted between G3FIJ and G4AC, to establish the facts.

No measurements have been made of signal strengths received /M via the Mini-Halo. In practice, however, its performance appeared at least comparable with its efficiency as a radiator. For example: Turning the aerial through 360 degrees produced no noticeable change in received signal level, and, under mobile conditions, flutter was almost invariably non-existent. This was also the case on the receiving side.

WEATHER EFFECT

Therefore, what the writer had set out to accomplish seemed, in the main, to have been achieved. But there was



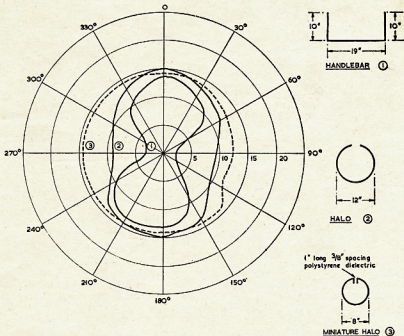
Mini-Halo aerials for mobile, as evolved by G4AC, ranging from 6 inches to 12 inches in diameter for two metres, and 18 inches for four metres. These aerials were designed and constructed for the tests discussed in his article.

chosen. After making up and testing a number of /M aerials, final choice for two metres fell to an 8-inch halo, for the reasons now discussed.

Types constructed and tried included 12-inch standard halo, handlebar, semi-swastika and turnstile types. All radiated reasonably well, but each produced a horizontal pattern containing nulls of varying severity, to which was largely attributed the well-known irritating, troublesome "whoof whoof" type flutter (as distinct from local change screening effects) on signals received in and from a moving vehicle.

On the assumption that these highly undesirable shortcomings were mainly due to uneven distribution of current over the radiating section of the aerial, concentration was centred upon the halo, which readily lent itself to miniaturisation. Several were made up, including models having diameters of 12, 8, 6 and 4 inches for 2 metres, and one of 18 in. for 4 metres.

In each case resonance was achieved by means of a solid dielectric capacity loading section, with built-in trimmer, accommodated within the circular radiator (see photographs), its otherwise open ends being continued diametrically within its circumference, as shown. In this way current distribution over the shortened radiating length was made less uneven, reducing with decreasing diameter. But where would the optimum fall?



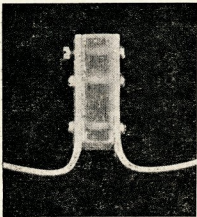
Radiation patterns for the three aerials discussed in his article by G4AC, showing the halo configuration appropriate to each pattern. These are for the two-metre halo's, at a frequency of 144.2 Mc., with an s.w.r. of 1.1:1 exhibited. The gamma matching feeds are 4 in. long with a 4.7 μ F series condenser. G4AC claims much improved performance when using these shapes under mobile conditions.

* Reprinted from "The Short Wave Magazine," January, 1965.

one failing. In wet weather moisture across the capacity loading section caused an off-resonance condition and greatly impaired performance — reminiscent of 300-ohm ribbon feeder days!

However, this was eventually eradicated completely by modification of the loading section.

First, each of the two arms were made to symmetrically opposite shape contained within the circumference of the halo. The substantially increased length was not easily accommodated and, in spite of high perfect resonance and almost 1-to-1 s.w.r., the result was an adverse effect upon the aerial's hitherto non-directional horizontal pattern.



Close-up of the solid-dielectric capacity loading section, actual size on an 8-inch diameter Mini-Halo for two metres, as designed by G4AC.

Further, whilst water mist sprayed on the loading section produced less deterioration than in the case of the solid dielectric type, the s.w.r. was degraded to an unacceptable level. And so, with some progress in one direction, failing was suffered in another.

To meet this problem, a new 8-inch diameter radiator was made up with spacing between its loading section arms increased to 1½ inches. To each arm was attached a 3-inch diameter capacity disc, capable of being moved along each arm to provide an easy method of resonating.

This time the moisture test showed no adverse effect on s.w.r., which remained at around 1.1 to 1. The next question was the all-round performance.

It was air-tested under mobile conditions between Woodbridge and Colchester, and at the same time and place the other halo types were re-tested. At the receiver of G3FLJ this disc-capacity type produced maximum carrier level and an omni-directional effect precisely similar to the results obtained with the best of all types so far tested.

Next, the 18-inch solid dielectric halo for 4 metres was made up and similarly tested, with the same highly satisfactory results.

Regularly for many months the 8-inch solid dielectric type has been

operated by G3FLJ and G4AC, both using 6J6 p.a. Tx's and 6AK5 r.f. Rx's, with extremely satisfactory—and indeed, occasionally—extraordinary good results.

G3LQR has also contributed with helpful reports from time to time. One QSO worthy of note was an absolutely solid cross-band duplex Phone contact, with G4AC/M on two metres and G3LQR on 4 metres over a range 26-28 miles, reducing to 18 miles or so at the QTH of G4AC, including passage through forest, riverside roads and narrow streets in built-up areas. The r.f. output at G4AC/M was approximately 1½ watts to aerial, the arrangement shown in the photographs.

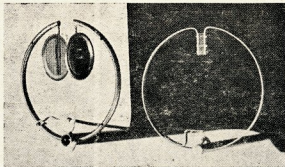
maintained—except in wet weather, as already described.

Bringing the disc type to resonance is on the same lines.

If provision can be made for one of the discs to be rotatable on a slightly off-centre single-bolt fixing, a useful trimmer results.

For anyone wishing for the quickest, simplest possible approach to this design—but not by any means the best—arms (flat dural) as already described, merely create the capacity section then drill and tap one arm as close as possible to the rim gap. Accurately opposite this hole drill another in the other arm of a size to accommodate an end plug from a BIC ball-point pen

Mini-Halo's of 8-inch diameter to the G4AC design showing solid and air dielectric capacity loading (left). These aeriels are for two-metre mobile.



CONSTRUCTION

The photographs should be self-explanatory. However, designs of this nature involve so many inherent variables, which are almost certain to differ aerial-to-aerial, that, in the writer's view, it is not possible to provide completely reliable measurements. For example: The radiator can be (and probably will be) 8 inches diameter more or less. Consequently, the loading section, which is generously accommodating, will be varied accordingly. G4AC's version is 1½ inches in length and G3FLJ's is one inch. Similarly, if the junk-box contains a couple of discs a bit less than 3 inches in diameter, by all means use them and adjust spacing accordingly.

Nevertheless, a few notes may be helpful. For easy reference the three main aeriels are numbered: 1—Solid dielectric type for two metres; 2—Disc type for two metres; and 3—Solid dielectric type for four metres. These are given in the Appendix.

ADJUSTMENT

Having made the solid-dielectric type loading section arms, say, a half inch longer than expected to be necessary, and a gamma match to radiator that can be easily varied, then with the feeder attached and an s.w.r. indicator in circuit, gradually reduce the length of the loading section. As resonance is approached adjustment will become more critical and sensitive as s.w.r. falls. Final adjustment and trimming of the loading section and gamma match will be found to be inter-dependent, and eventually a very low s.w.r. can be secured. Once gained, resonance should be positive and easily

casing (!). Centrally through this drill a clearance hole (6BA). Insert a 6BA bolt, screw it into the opposite arm and thus one has a widely variable capacity loading section—which, once having been brought to resonance, is very easily kept on the nose. But this arrangement will not tolerate more than a watt or two of r.f. input.

APPENDIX

Dimensions for 2-m. and 4-m. Mini-Halo

	(1)	(2)	(3)
Radiator diameter	8	8	18
Radiator material	3"	3"	3"
Capacity-disc diameter	—	3	—
Total length, capacity-section arms	2	4	3½
Capacity-section, dielectric length	1½	—	2**
Capacity-section, arm diameter	—	—	3/16"
Gamma match, centre mast to radiator connection	1½	3	2½
Feed point connection	1½	1½	1½

Notes: All dimensions in inches. Aerial (1) is for 2 m., solid dielectric; (2) is for 2 m., with disc resonator; (3) is for 4 m., with solid dielectric. Where marked * use ¼ inch flat dural curtain valance rail. ** this is continued cut 5 in. to provide anchorage for stabilising bracket. Feed impedance in each case is 75 ohms.

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R." in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

TUNNEL DIODE AMPLIFIERS*

With a practical design for a Parallel Amplifier on 70 cm

SVEN F. WEBER, B.Mus., L.R.A.M.,
G6SFW/T, G8ACC

TUNNEL diodes have been available at a reasonable price for some years. They have been talked about for even longer, but the fact remains that the average Amateur has very little idea of the potentiality of these most extraordinary products of semi-conductor research; and this in spite of the fact that tunnel diode circuits are almost ridiculously simple (at least on paper) and that results are very easy to achieve.

One of the factors which has the largest effect on semi-conductor action is impurity content. By and large, if the impurity content in the semi-conductors forming a junction diode is reduced, the reverse voltage capability of the diode is increased. Equally, if the impurity content is increased, the reverse voltage possible is reduced. So far so good—and taken for granted by most Amateurs. If, however, the impurity content is made sufficiently high, around 2×10^{18} atoms per cc in Germanium, the reverse breakdown voltage is reduced to zero and the diode becomes almost an ordinary conductor in the reverse direction. This degree of "doping" is said to make the semi-conductor "degenerate."

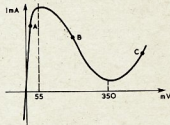


Fig. 1. Plotting current against applied voltage to a tunnel diode.

The fact that the reverse breakdown voltage drops to zero is not by any means all that happens. If degenerate p and n semi-conductor materials are brought together under very carefully controlled manufacturing conditions to make an extremely abrupt junction, of the order of 150 Å in thickness, the forward characteristic is also af-

fected. Drawing a graph of current against voltage, one obtains a curve similar to Fig. 1. Starting from zero volts across the diode, the current at first increases more or less linearly in the forward direction. At about 55 mV though, the current levels off and then starts to decrease until at 350 mV (for Germanium) it reaches a minimum and again starts to climb—more as one would have expected from a semi-conductor diode.

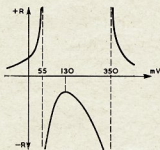


Fig. 2. A.C. resistance plotted against voltage.

Looking at this graph a bit more closely, the slope of the curve at any point is a measure of the diode A.C. resistance, and this can again be plotted against voltage as in Fig. 2.

The really interesting part of this graph is the central portion where the curve is negative. What does this mean or imply? By definition, any ordinary resistor dissipates power when current flows through it. It follows then, that a negative resistance will generate power; in fact, current flowing into it will be out of phase with current leaving it. Impossible? Remember that this is not a resistance in the d.c. sense; it is an A.C. resistance of a valve; a negative incremental resistance. Put this negative resistance

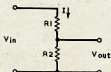


Fig. 3. Positive and negative resistances in series.

in series with or in parallel with a load and the possibility of power gain will become more evident. Let us take the series case first. If a voltage V is applied to R_s and R_L in Fig. 3, and the voltage across R_L is measured, it will be found to be IR_L , where I is the current due to V through both resistors. V equals $I(R_s + R_L)$, and therefore the "gain," that is,

$$\frac{V_{out}}{V_{in}} = \frac{R_L}{R_s + R_L}$$

and, if R_s is negative, the result can be greater than 1. It can even approach infinity if the two R s are equal. The parallel case is just as obvious though in this case it is better to work with conductances (reciprocal resistances) as in Fig. 4. If source and load conductances are equal then the source current splits equally between the two halves of the circuit, the power of the

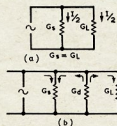


Fig. 4. (a) Positive conductances in parallel; (b) Positive source and load conductances in parallel with a negative conductance.

load is $\frac{I^2}{4G_L}$ and the power gain cannot be greater than 1. If the load is paralleled by a negative conductance, then current in this section will be out of phase with the driving current. That is, the negative conductance acts as an additional source and supplies additional current to the circuit. Load current can now be greater than $\frac{I}{2}$ and power gain exceeds 1. The power gain will be seen to be

$$\frac{P_{out}}{P_{in}} = \frac{4g_s g_L}{(g_s + g_L - g_p)^2}$$

which can again approach infinity, as can be seen by making the source and load conductances together equal the diode conductance.

*Reprinted from "RSGB Bulletin," Feb., 1965.

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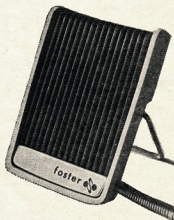
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Drawing a curve for the parallel case, plotting "resultant" impedance against source impedance, all other things being equal, leads to the odd-looking curve in Fig. 5. As the source resistance is increased towards the value of the diode resistance, the resultant increases and shoots off towards infinity. That is, any current I that may be flowing through the source is equally flowing through the resultant, giving rise to a much higher voltage than would appear across the source. Increase the source resistance above that of the diode and the resultant immediately reappears from negative infinity and drops towards a value equal to the diode negative resistance. But, and this is important, the resultant here is always negative, and the device will oscillate (or switch).

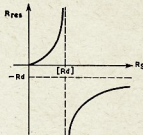


Fig. 5. Resultant resistance for negative (diode) and positive resistances in parallel.

Let us now look at the diode itself a bit more closely. There are many good explanations of its physical operation (1, 2, 3), but these are by no means necessary for an understanding of its circuit function. In purely practical terms, the diode is a negative conductance in parallel with a small capacitance, with the whole lot in series with an inductance and some residual resistance of the more normal kind. We will play with these for a start (see Fig. 6).

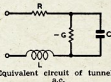


Fig. 6. Equivalent circuit of tunnel diode for a.c.

Total impedance across the terminals:

$$Z_{in} = j\omega L + \frac{1}{\frac{-g}{j\omega C + g} + g} + R \quad \dots (1)$$

$$= j\omega L + \frac{j\omega C + g}{j\omega C + 2g} + R$$

Equating real and imaginary parts:

$$Z_r = \frac{-g}{\omega^2 C^2 + g^2} + R \quad \dots (2a)$$

$$Z_i = j\omega \left[L - \frac{C}{\omega^2 C^2 + g^2} \right] \quad \dots (2b)$$

At frequencies we can call "resistive cut-off" and "self resonant" respectively, these will become zero:

i.e. $R = \frac{g}{\omega^2 C^2 + g^2}$ or $f_r = \frac{g}{2\pi C \sqrt{Rg - 1}} \quad \dots (3a)$

and: $L = \frac{C}{\omega^2 C^2 + g^2}$ or $f_L = \frac{1}{2\pi \sqrt{LC - \left(\frac{R}{g}\right)^2}} \quad \dots (3b)$

The implications of the two equations we have ended with are quite simple. The resistive cut-off frequency, f_r , is the frequency above which the diode will not amplify because its negative resistance has been effectively reduced to zero, and the self-resonant frequency f_L decides the normal maximum frequency of oscillation. Let us put in some values. The IN2940 diode is suitable, and the published characteristics are as follows:

$g = 6.6 \text{ mmho.}$
 $C = 5 \text{ pF nominal.}$
 $L = 1 \text{ m}\mu\text{H with leads clipped very short.}$
 $R = 1.5 \text{ ohm.}$

which gives f_r as 2100 Mcs., and f_L as 1300 Mcs. So there is obviously some u.h.f. possibility in these devices.

Looking a little more closely at the two equations and remembering that L , C and R can be added externally, if f_r is lower than f_L , then the device will want to oscillate. If it is higher, then it will amplify, so:

$$\frac{1}{2\pi \sqrt{LC - \left(\frac{R}{g}\right)^2}} > \frac{g}{2\pi C \sqrt{Rg - 1}}$$

$$\therefore Lg < RC$$

$$\text{or } R > Lg/C \quad \dots (4)$$

Also for real values of f_r :

$$\frac{1}{Rg} > 1$$

$$\therefore \frac{1}{g} > R \quad \dots (5)$$

Combining these two results gives: $\frac{1}{g} > R > Lg/C \quad \dots (6)$

and any successful amplifier must satisfy these conditions. Actual gain is determined by matching source and load conductances to that of the diode.

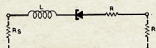


Fig. 7. A.c. circuit of series amplifier.

Take a practical case: a series amplifier for 145 Mcs. (see Fig. 7). Here the source, diode and load resistances are cascaded and the total source and load resistance should again approach the value of diode resistance. The diode with the highest available value of negative resistance (at the inflection point) is the IN2939, and it is 150 ohms. This is only just twice 75 ohms—a usual aerial and receiver impedance value—so, for the sake of argument, we will assume that impedances of the order of 40 ohms are available (actually it would not matter, as will be explained later), and that the shunt capacity across the diode is 5 pF. Considering the external source and load impedances as part of the diode residual impedance R , we can calculate the total permissible value of R from equation 3a:

$$R = \frac{g}{\omega^2 C^2 + g^2} = \frac{6.6 \times 10^{-3}}{(2\pi \times 145 \times 10^6 \times 5 \times 10^{-12})^2 + (6.6 \times 10^{-3})^2} = 103 \text{ ohms.}$$

Impedances external to the diode will account for 80 ohms, the diode for 1.5 ohms, leaving 21.5 ohms to be supplied in the form of a non-inductive resistor. Now for the series inductance. Lg/C must be

just less than R (at all frequencies), and working this out gives a figure of 78 mH, of which up to 12 mH can be accounted for in the diode leads.

So the design is simply 40 ohms source and load, 21.5 ohms series resistance and 0.078 μH series inductance. If the source and load also happen to have a d.c. resistance of 40 ohms each, biasing conditions (the same in essence) will have been met, or the diode can be supplied as shown. This kind of amplifier can give a steady 30db gain at 145 Mcs. with no trouble at all, which can be increased to over 40db at the expense of bandwidth by increasing L towards its limit of 78 mH.

It may, of course, be objected that the aerial and receiver impedances are not known accurately enough. This really does not matter much: a commercially built aerial will usually be near its design impedance, and providing it is matched to its cable, one can assume that the impedance at the bottom end is what one thinks it is. In this design there is a total of 103 ohms to play with, so if the aerial is of 75 ohms impedance, 28 ohms would have to be found elsewhere: in the receiver. It would be just a matter of tapping down on the receiver input coil until a suitable point was found. The only possible cause of trouble would be if the impedances were substantially higher at some other frequency, which could cause oscillation.

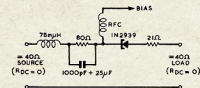


Fig. 8. A practical tunnel diode amplifier circuit for 145 Mcs.

Now, a parallel amplifier. At u.h.f. the parallel amplifier is by far the easier to manipulate (the series amplifier becomes rather awkward, as will be seen if figures for a higher frequency are tried in the equations above), and is conveniently in the form of a loaded quarter-wave co-axial line. Several designs have been published, most of which are noteworthy for their impracticability as far as the Amateur is concerned. One beautiful design uses two diodes across a strip-line coupled hybrid to give a gain of up to 10db—with a noise factor 1.9db—over a bandwidth of from 210 to 625 Mcs. (4), which is all very well until one discovers the price of a strip-line coupled hybrid. The writer has a rooted objection both to paying more and doing more work than is necessary on any project, so after finding out current circulator prices he came down to earth rather rapidly and decided to make life as easy for himself as he could. For this reason, the unit to be described was made with no more tools than a fine hacksaw, a drill, some taps and dies, a precision file and a screwdriver. Plus, well, some elbow grease. Cost? Not more than 10/-, excluding the diode.

DESIGNING A TYPICAL AMPLIFIER

The centre frequency of this unit is to be 435 Mcs. (a wavelength of 68.98 cm). Tunnel diodes usually have a capacitance of around 5 to 10 pF, and this varies between samples, so far a parallel amplifier of reasonable length, a low impedance trough line would appear the best. Using commercially available $\frac{1}{2}$ in. brass channel of 16

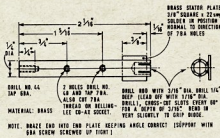


Fig. 8. (a) Details of the $\frac{1}{4}$ in. diam. centre line; (b) A TO-18 tunnel diode base. Pins 1 and 2 are the positive electrode, connected together internally. Cut these leads to $\frac{1}{4}$ in., and clip both to the feed-through capacitor. Pin 3, the negative electrode, is connected internally to the housing, and the lead should be clipped short.

s.w.g., with a $\frac{1}{4}$ in. lid and a $\frac{1}{4}$ in. diameter centre rod, the line impedance is getting on for 60 ohms. With a line length of 5 cm, the Z.c product is 800, so about 13 pF will be needed to tune to resonance. This gives a choice of diodes. The 1N2939 and 1N2940 have a design capacity of about 5 pF; the 1N2969A has about 8 pF. All three have the necessary frequency capabilities. However, the conductance of the first two is 60 mho (150 ohms), which makes it difficult to match, while the 1N2969A is 16 mho (63 ohms) which seems a better proposition (remember that the source and load conductances are in parallel).

The 1N2969A diode will want to see an admittance of 16 mmho at its end of the line. This will be made up of two parts: that of the aerial and that of the receiver, both transformed by their respective positions on the line. From considerations of noise, the receiver

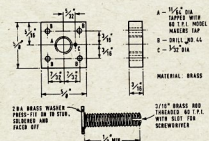


Fig. 10. (a) The tuning capacitor side plate, formed from $\frac{3}{8}$ in. x $3/16$ in. brass strip. The rotor shaft spring clip is $\frac{1}{8}$ in. of 22 s.w.g. piano wire shaped to a "U" form, and bent at one end to fit in the $1/32$ in. diam. hole C. The other end clips under one of the 8 BA screws, either top or bottom left; (b) The capacitor rotor assembly.

output should be "undermatched," so its tapping point will be further down the line than the aerial point. We shall allow a bit over 5 mmhos for the receiver and 10 mmhos for the aerial as seen at the diode. If each has an actual conductance of 13.3 mmhos (75 ohms impedance), it is now easy to calculate where the tapping points should be. The line admittance at any point is directly proportional to the cotangent of the phase angle at that point (this sounds awful: all it means is that the line impedance follows a tangent curve), but for a length of line short in relation to a quarter wavelength, the change can be taken as approximately linear. The receiver point will be at $\frac{13.3}{5} \times 5 \text{ cm} = 1.9 \text{ cm}$, and the aerial at $\frac{10}{13.3} \times 5 \text{ cm} = 3.8 \text{ cm}$.

That completes the theory. We now have a 60 ohms trough line made of $\frac{3}{4}$ in. square channel and $\frac{1}{4}$ in. rod centre conductor, tapped at 1.9 and 3.8 cm from the shorted end, and with a 1N2969A diode doing all the work.

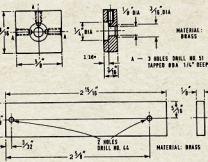
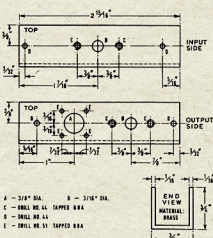


Fig. 11. (a) The tunnel diode amplifier line made of epoxy, cut from $\frac{1}{4}$ in. \times $\frac{1}{16}$ in. equal sided brass channel; (b) Centre line end support plate in trough. The dimensions and drilling for the capacitor (feed-through) plate are the same, with the exception that the centre hole is $9/64$ in. diam. drilled right through. The 1000pF feed-through capacitor, preferably the type having a 1000pF tolerance, is soldered to the diode leads, is soldered into the hole. This end plate must not be soldered into the trough; (c) Cover.

CONSTRUCTIONAL DETAILS

The materials required consist of 3 in. of square section 16 s.w.g. $\frac{1}{2}$ in. brass channel, lengths of $\frac{1}{2}$ in. x 3/16 in. and $\frac{1}{2}$ in. x $\frac{1}{2}$ in. brass strip, 3 in. of $\frac{1}{2}$ in. brass rod, and a few inches of 3/16 in. brass rod. Also needed are a 2 BA brass washer and a 1000 p.f. feed-through condenser, plus, of course, screws, etc. Drilling details are given in the diagrams. To tap 8 BA threads, use a number 51 drill, for 7 BA a number 48, for 6 BA a number 44 and for the 3/16 in. x 60 t.p.i. model engineer's tap, an 11/64 in. drill. A number 44 drill can be used for a hole to clear 8 BA.

The centre rod is cut to 5.2 cm, and will be recessed in its end plate by mm. To make the socket for the diode at the end of the rod, first drill with a number 44 for a short distance, making certain that it is dead centre. Then re-drill with a 3/16 in. drill to a depth of 1 in. Assuming that the drill has gone in centrally, then make three cross-cut slots with a saw and clean up the edges.

The tuning condenser is a little more difficult. Cut a $\frac{1}{2}$ in. square section from the strip and after marking out the centre, drill a $11/64$ in. hole and tap with the $3/16$ in. x 60 t.p.i. taper tap (gently does it!). The four mounting holes are drilled as shown. Drill also a $1/32$ in. hole a little to one side of the central threaded hole to take the locking clip, made of 22 s.w.g. wire. Saw with a hacksaw an inch section of the $3/16$ in. rod with the 60 t.p.i. die, saw off the end, clean up with a fine file and carefully make a cross-cut for screwdriver adjustment. Tap the 2 BA washer with the 60 t.p.i. tap, fit on, braze (do not use too much solder) and file flat. With a little care it is quite possible to get a good-as-perfect right-angled fit, which is very necessary. The stator is made of a $\frac{1}{2}$ in. flat square of 22 s.w.g. brass brazed on to the end of the central rod. Be careful that its plane is exactly at right angles to that of the two 7 BA holes further down the line.

When all the parts are ready and clean, fit them together and braze the centre rod assembly and channel, but not with the sockets in position. All the other parts screw on. Finish off with a fine file and fit on the sockets and tuning condenser assembly. Having soldered in the feed-through condenser on the end plate, fit the tunnel diode into its socket on the rod, clip lead 3 very short, then leads 1 and 2 to about $\frac{1}{4}$ in, pinch together and fit into bypass condenser and screw everything together.

POWER SUPPLY

Tunnel diodes work at very low voltages, and also, as they are majority-current devices, the junction cross-sectional area is very, very small (about 0.0001 in. diameter). So one overload and you go out and buy a new one. An absolute maximum of 10 mA., which represents about 4 mW, is quoted for the 1N2969A, and this really is an absolute maximum if you want to keep the diode intact. Actually, however, with the voltages in use, there is not much danger of passing too much current unless the polarity

160 METRE DX AND "THE 169 YEAR CYCLE"

(Reprinted from "Radio ZS.")

(With credit to George Jacobs, W3ASK, "The Sunspot Story, Cycle 19, the Declining Years." Available through CQ. One dollar.)

The maximum smoothed sunspot number ever recorded in any sunspot cycle was 201.3, in March, 1958. The lowest ever recorded was 3.3, in April, 1954. The 11 year cycle varies between an average maximum of 140 and an average minimum of 10. Additionally now, it is quite certain, based on some good short term records and long term computations, that these 11 year cycles are superimposed upon a long slow 169 year cycle, such that maximum sunspot numbers increase and decrease rather slowly over a longer 169 year period. What is of particular importance and interest to 160 DXers is that we are now at the low point of this 169 year cycle, and since 160 conditions are better the lower the sunspot number, it means that, since the sunspot numbers will rise slowly for quite a few years, we should enjoy 160 DX quite a lot longer than we ordinarily would. For example, the low 1964 number will hover around 9, 10, 11, 12, 16, 18, and conditions have been quite good. In 1965 (IQSY) the lowest numbers are estimated to be between 5 and 9; 1966, back to about 15-25; 1967, back up to 20-40; 1968, 40-50; with the maximum at the peak of next 11 year cycle being possibly not over 60, or even less.

The next 11 year cycle following that might not exceed a smoothed number of 75, either. In fact, S. G. Luts, of Hughes Research Labs., predicts numbers will not go over 75 for the balance of the century, or until the year 2000, and will probably average around 40! Think of it! Not over 40, when the maximum has been over 200, for the next 35 years! This means we 160 boys should have lots more happy hunting on 160 for some time. We are sorry for the h.f. boys, of course, but we 160ers will thankfully make the most of our golden opportunity.

Why is 160 better the lower the sunspot number, which means lower ionisation of the ionosphere? Because the greater the ionisation, the greater the absorption and less reflection of LF 160 signals and conversely the lower the ionisation (low sunspot numbers), the less absorption and the greater the reflection of LF 160 signals for DX purposes. Interesting? Good theory? Let's all make the most of it—and b.c.n.u. as usual on 160.

Happy IQSY's—1965 and 1966.

—Stew W1BB.

is accidentally reversed. A supply is therefore needed to give up to 350 mV, and it should be apparent from our equations that the diode bias supply must also be of equal or lower impedance than the diode, which is 63 ohms in this case. If it is not, the diode will simply switch itself permanently (or bi-stably, depending on circuit inductance) into a high or low voltage state (points C or A in Fig. 1). To get stable operation at point B, the bias supply load line must cross the curve at one point only; in other words, be of lower impedance than the diode. It may also be noticed that stray inductance, even when bypassed by 1000 pF (remember $L < Rg/C$), could prove troublesome. For this reason use a 25 pF decoupling electrolytic immediately across the 1000 pF bypass. The bias supply can be obtained in many ways: from batteries or other voltage sources via Zener diodes, from forward biased junction diodes or even series regulating n-p-n transistors. The last method has the slight advantages of lower current

fore 130 mV. (the point of maximum conductance) is reached: this only means that the aerial and receiver impedances are not quite what you thought they would be. It does not matter though: pretty high gain will be available before it goes off the deep end, as the diode, on some part of its characteristic, can match anything provided it is of lower conductance than the diode maximum. It will thus oscillate when it over-matches. If the gain goes through a maximum and then drops off, the aerial and receiver impedances are less than 75 ohms. However, even with 50 ohms source and load, the maximum available gain would still be of the order of 13db.

NOISE, GAIN AND OTHER POINTS

The tunnel diode negative resistance shows shot noise as does any resistance, but the noise temperature is of the order of 300°K only, which is much better than either a valve or a transistor, though not as good as a parametric amplifier or a maser. The noise is also frequency dependent to the extent that as one approaches the cut-off frequency, the noise figure gets worse. However, even at a frequency of $1/\sqrt{2}$ of f , the noise figure is only 6db. At medium frequencies (in the 400 Mcs. range) a noise figure between 3 and 4db can quite easily be obtained (5).

For the particular circuit configuration shown, the calculated gain-bandwidth product is around 300×10^6 c/s and this appears to agree quite well with results obtained in its use, as does the calculated noise figure mentioned above. One can literally choose the value of gain to suit one's own convenience, the limit being set by what bandwidth is required and the difficulty in holding it stable with very high values. 30db is possibly an effective limit.

As mentioned before, tunnel diodes do not like being overloaded in any way. Up to a point they have a built-in a.g.c. action (this follows from Fig. 1), and this non-linearity can produce some most curious spurious responses from out-of-band local T.V. transmitters. But it will not cope with a transmitter feeding it with a few watts: both input and output sides must be well shielded from strong r.f. fields, and it is a good idea to place a 75 ohm dummy load across the input when the aerial is removed. So be careful!

Other than this they are very useful and reliable little devices which work with the minimum of fuss, provided a few simple precautions are observed (i.e., series inductance and bias impedance, stray r.f., etc.). It is quite possible to extend the operation of a parallel amplifier to 1290 Mcs. with an S-band diode, where its noise figure would still make it worthwhile. Their main disadvantage, that they cannot readily be cascaded, is of no consequence to the Amateur. Try one and see how easy it is.

REFERENCES

- (1) "GE Tunnel Diode Manual" (GE, New York, 1961).
- (2) "Radio Constructor," November, 1960.
- (3) "Tunnel Diode and Semiconductor Circuits" (Carroll: McGraw-Hill).
- (4) "Proc. IRE," July, 1960, p. 1321.
- (5) NEC Convention Record, 1960.

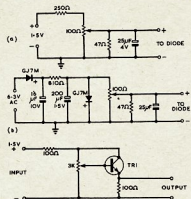


Fig. 12 (a) A simple battery operated bias supply; (b) An a.c. fed bias supply using a forward biased diode to stabilise the voltage; (c) A series regulated transistor supply which was used in the prototype amplifier. TR1 may be any n-p-n transistor having a reasonable gain. A 25 pF electrolytic capacitor must be connected across the output close to the 1000 pF feed-through capacitor.

drain from the battery and a higher value variable resistor for control—low resistance carbon track pots are rather difficult to obtain. Against this must be set increased cost and complexity. Still, providing that, in this case, the tunnel diode sees a source of no more than 60 ohms, all will be well as far as biasing is concerned. Drain is very low: at the optimum setting the diode will use only about 1 mA. and maybe the bias supply can afford to lose a few more to get the required low impedance.

ALIGNMENT

Alignment is simple. Using a sensitive volt meter to measure the voltage across the diode, increase this to about 200 mV. Plug in aerial and receiver and search for a medium-strength signal. Tune up the amplifier whilst gradually reducing the bias. The signal will increase considerably in strength without, in most cases, much increase in background noise. In all probability the unit will oscillate be-



R.F. RATINGS FOR T.V. DEFLECTION VALVES

TYPES 6DQ6, 6GW6,
6GT5, and 6JB6

TYPES 6DQ5, 6GX5, 6JE6

RF Power Amplifier and Oscillator—
Class C Telephony
and

RF Power Amplifier and Oscillator—
Class C Telephony
and
RF Power Amplifier—Class C FM
Telephony

Maximum Ratings, Absolute Values:

Maximum Ratings, Absolute Values:	ICAS
DC Plate Voltage	750 volts
DC Grid No. 2 (screen) Voltage	250 volts
DC Grid No. 1 (control grid) Voltage	150 volts
DC Plate Current	140 Ma.
D.C. Grid No. 1 current	3.5 Ma.
Grid No. 2 input	3.0 watts
Plate Dissipation	20 watts
Peak Heater-Cathode Voltage:	
Heater Negative with respect to Cathode	135 volts
Heater Positive with respect to Cathode	135 volts
Bulb Temperature (at hot-test point on bulb surface)	240°C

Plate-Modulated RF Power Amplifier
—Class C Telephony
(carrier conditions per valve for use with a maximum modulation factor of 1.0)

Maximum Ratings, Absolute Values:	ICAS
DC Plate Voltage	600 volts
DC Grid No. 2 (screen) Voltage	250 volts
DC Grid No. 1 (control grid) Voltage	150 volts
DC Plate Current	115 Ma.
DC Grid No. 1 Current	3.5 Ma.
Grid No. 2 input	2.0 watts
Plate Dissipation	15 watts
Peak Heater-Cathode Voltage:	
Heater Negative with respect to Cathode	135 volts
Heater Positive with respect to Cathode	135 volts
Bulb Temperature (at hot-test point on bulb surface)	240°C
Maximum Grid No. 1 Circuit Resistance	33,000 ohms

AF Power Amplifier and Modulator
—Class AB1

Maximum Ratings, Absolute Values:	ICAS
DC Plate Voltage	750 volts
DC Grid No. 2 (screen) Voltage	250 volts
Max. Signal DC Plate Current	125 Ma.
Max. Signal Grid No. 2 Input	3.0 watts
Plate Dissipation	20 watts
Peak Heater-Cathode Voltage:	
Heater Negative with respect to Cathode	135 volts
Heater Positive with respect to Cathode	135 volts
Bulb Temperature (at hot-test point on bulb surface)	240°C
Maximum Grid No. 1 Circuit Resistance	0.1 megohm

Maximum Ratings, Absolute Values:	ICAS
DC Plate Voltage	750 volts
DC Grid No. 2 (screen) Voltage	175 volts
DC Grid No. 1 (control grid) Voltage	150 volts
DC Plate Current	280 Ma.
DC Grid No. 1 Current	3.5 Ma.
Grid No. 2 Input	3.5 watts
Plate Dissipation	32 watts
Peak Heater-Cathode Voltage:	
Heater Negative with respect to Cathode	135 volts
Heater Positive with respect to Cathode	135 volts
Bulb Temperature (at hot-test point on bulb surface)	250°C
Maximum Grid No. 1 Circuit Resistance	33,000 ohms

Plate Modulated RF Power Amplifier
—Class C Telephony
(carrier conditions per valve for use with a maximum modulation factor of 1.0)

Maximum Ratings, Absolute Values:	ICAS
DC Plate Voltage	600 volts
DC Grid No. 2 (screen) Voltage	175 volts
DC Grid No. 1 (control grid) Voltage	150 volts
DC Plate Current	230 Ma.
D.C. Grid No. 1 current	3.5 Ma.
Grid No. 2 Input	2.3 watts
Plate Dissipation	21 watts
Peak Heater-Cathode Voltage:	
Heater Negative with respect to Cathode	135 volts
Heater Positive with respect to Cathode	135 volts
Bulb Temperature (at hot-test point on bulb surface)	250°C
Maximum Grid No. 1 Circuit Resistance	33,000 ohms

AF Power Amplifier and Modulator—
Class AB1

Maximum Ratings, Absolute Values:	ICAS
DC Plate Voltage	750 volts
DC Grid No. 2 (screen) Voltage	175 volts
Max. Signal DC Plate Current	280 Ma.
Max. Signal Grid No. 2 Input	3.5 watts
Plate Dissipation	32 watts
Peak Heater-Cathode Voltage:	
Heater Negative with respect to Cathode	135 volts
Heater Positive with respect to Cathode	135 volts
Bulb Temperature (at hot-test point on bulb surface)	250°C
Maximum Grid No. 1 Circuit Resistance	0.1 megohm

Reprinted from "Radiotronics," April 1964.

Wireless Institute of Australia

The Institute was founded in 1910 to promote interest in Amateur Radio. Today each State has its own Division, responsible for intrastate matters.

Any person with an interest in Amateur Radio, including Short Wave Listening, may join the Institute; it is not necessary to possess a transmitting license.

Enquiries for membership should be made to the Secretary in the respective State; addresses are as follows:—

New South Wales: 14 Atchison Street, Crows Nest.

Victoria: P.O. Box 36, East Melbourne, C.2.

Queensland: Box 638J, G.P.O., Brisbane.

South Australia: Box 1234K, G.P.O., Adelaide.

Western Australia: Box N1002, G.P.O., Perth.

Tasmania: Box 851J, G.P.O., Hobart.

The W.I.A. also provides various aids for Amateurs and these are available from the Victorian Division, or other State offices.

STATION LOG BOOK OR S.W.L. LOG

Size 10" x 8", with pages ruled to provide all essential requirements for Amateur Stations or Short Wave Listeners. Available for 7/6 including postage.

LOG SHEETS

Specially ruled sheets for Field Day or Portable Station operation. Basically as the Log Book above, but includes requirements for the Federal Contest Committee. Available for 3/6 for fifty sheets, plus postage.

AUSTRALIAN RADIO AMATEUR CALL BOOK

The only directory of all registered Australian Amateur Radio Stations and Short Wave Listeners. Contains current details of DX Countries List, Prefixes and Zones. Issued yearly and available for 6/- each.

"AMATEUR RADIO" MAGAZINE

The only hobby magazine devoted entirely to Amateur Radio, Short Wave Listening, news, views, and construction articles. Available on direct subscription from the Victorian Division for 30/- a year post free.

★

INVITE YOUR FRIENDS TO JOIN THE W.I.A. TODAY . . .

and become one of the members. Remember that you receive a free copy of "A.R." with your subscription.

REMEMBRANCE DAY CONTEST, 1965

A perpetual trophy is awarded annually for competition between Divisions. It is inscribed with the names of those who made the supreme sacrifice, and so perpetuates their memory throughout Amateur Radio in Australia.

The name of the winning Division each year is also inscribed on the trophy and in addition, the winning Division will receive a suitably inscribed Certificate.

Objects

Amateurs in each Call Area, including Australian Mandated Territories and Australian Antarctica will endeavour to contact Amateurs in other Call Areas. In addition, Amateurs will endeavour to contact any other Amateurs on the authorised bands above 52 Mcs. (i.e., intrastate contacts will be permitted in the v.h.f./u.h.f. bands.)

Contest Date

0800 hrs. G.M.T., Saturday, 14th August, 1965, to 0759 hrs. G.M.T., Sunday, 15th August, 1965.

All Amateur Stations are requested to observe 15 minutes' silence before the commencement of the contest on the Saturday afternoon. An appropriate broadcast will be relayed from all Divisional Stations during this period.

RULES

1. There shall be five sections to the Contest:—

- (a) Transmitting Phone.
- (b) Transmitting C.w.
- (c) Transmitting Open.
- (d) Receiving Open.
- (e) Transmitting Open—v.h.f./u.h.f. only.

2. All Australian Amateurs may enter the Contest whether their stations are fixed, portable or mobile. Members and non-members will be eligible for awards.

3. All authorised Amateur bands may be used but cross-band operation is not permitted.

4. Amateurs may operate on both Phone and C.w. during the Contest, i.e., phone to phone or C.w. to C.w. However, only one entry may be submitted for sections (a) to (d) in 1. A separate entry may be submitted for

section (e) in 1. An open log will be one in which points are claimed for both phone and C.w. transmissions. Refer to Rule 11 concerning Log entries.

5. Only one contact per station per band is allowed. However, a second contact can be made on the same band using the alternate mode. Arranged schedules for contacts on other bands are prohibited.

6. Multi-operator stations are not permitted. Although log keepers are permitted only the licensed operator is allowed to make contact under his own call sign. Should two or more wish

Phone: Substitute operators will call "C.Q. R.D." or "C.Q. Remembrance Day" followed by the call of the station they are operating, then the word "log" followed by their own call sign, e.g., "C.Q. Remembrance Day from VK4BBB log VK4BAA."

C.w.: Substitute operators will call "C.Q. R.D. de" followed by the group call sign comprising the call of the station they are operating, an oblique stroke and their own call, e.g., "C.Q. R.D. de VK4BBB/VK4BAA."

Contestants receiving signals from a substitute operator will qualify for points by recording the call sign of the substitute operator only.

7. Entrants must operate within the terms of their licences.

8. Cyphers—Before points may be claimed for a contact, serial numbers must be exchanged and acknowledged. The serial number of five or six figures will be made up of the RS (telephony) or RST (C.w.) reports plus three figures, that will increase in value by one for each successive contact. If any contestant reaches 999 he will start again with 001.

9. Entries must be set out as shown in the example, using ONLY ONE SIDE of the paper and wherever possible standard W.I.A. Log Sheets should be used. Entries must be clearly marked "Remembrance Day Contest 1965" and must be postmarked not later than 6th September, 1965. Address them to "Federal Contest Manager, W.I.A., G.P.O. Box N1002, Perth, W. Aust. Late entries will be disqualified."

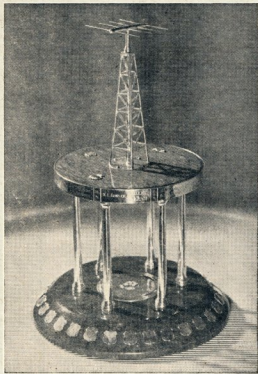
10. Scoring will be based on the table shown. A bonus of 25 points may be claimed for the first contact with other call areas on each of the bands 52 Mcs. and above.

SCORING TABLE

		To									
		VK0	VK1-2	VK3	VK4	VK5-8	VK6	VK7	VK9		
From	VK0	—	6	6	6	6	6	6	6	6	6
	VK1-2	6	—	6	1	2	3	5	4	6	6
	VK3	6	1	—	3	2	5	4	6	6	6
	VK4	6	1	2	—	3	6	5	4	6	6
	VK5-8	6	2	1	3	—	5	4	6	6	6
	VK6	6	1	2	4	3	—	5	6	6	6
	VK7	6	2	1	4	3	5	—	6	6	6
	VK9	6	1	2	3	4	5	6	—	6	6

Note.—Read table from left to right for points for the various call areas.

In addition, all intrastate contacts on bands 52 Mcs. and above are worth 1 point each.



Remembrance Day Contest Trophy

to operate any particular station, each will be considered a contestant and must submit a separate log under his own call sign. Such contestants shall be referred to as "substitute operators" for the purposes of these Rules and their operating procedure must be as follows:—

EXAMPLE OF TRANSMITTING LOG

Date/Time G.M.T.	Band	Emission and Power	Call Sign Worked	RST No. Sent	RST No. Rcvd.	V.h.f. Bonus	Points Claim.
AUG. '65							
14 0810	7 Mc.	A3 (a)	VK5PS	58002	—	—	2
14 0812	"	"	VK6RU	59097	—	—	5
14 1035	82 "	"	VK4ZAZ	56010	—	—	28
14 1040	"	"	VK3ALZ	59025	—	—	1

Note.—Standard W.I.A. Log Sheets may be used to follow above form.

EXAMPLE OF RECEIVING LOG (VICTORIAN S.W.L.)

Date/Time G.M.T.	Band	Emission	Call Sign Heard	RST No. Sent	RST No. Rcvd.	Station Called	V.h.f. Bonus	Points Claim.
AUG. '65								
14 0810	7 Mc.	A3 (a)	VK5PS	58002	—	VK6RU	—	2
14 0812	"	"	VK6RU	59097	—	VK7EJ	—	5
14 1035	82 "	"	VK4ZAZ	56010	—	VK3ZDR	25	28
14 1040	"	"	VK3ALZ	59025	—	VK3QV	—	1

Note.—Standard W.I.A. Log Sheets may be used to follow the above form.

11. All logs shall be set as in the example shown and in addition will carry a front sheet showing the following information:—

Name.....Section.....
Address.....Call Sign.....

Claimed Score

Declaration: I hereby certify that I have operated in accordance with the Rules and spirit of the Contest.

Signed.....

Dated.....

All contacts made during the Contest must be shown in the log submitted (see Rule 4). If an invalid contact is made it must be shown but no score claimed.

Entrants in the Open Sections must show C.w. and Phone contacts in numerical sequence.

12. The Federal Contest manager has the right to disqualify any entrant who, during the Contest, has not observed the regulations or who has consistently departed from the accepted code of operating ethics. The Federal Contest manager also has the right to disallow any illegible, incomplete or incorrectly set-out logs.

13. The ruling of the Federal Contest manager of the W.I.A. is final and no disputes will be discussed.

AWARDS

Certificates will be awarded to the top scoring stations in sections (a) to (c) of Rule 1 above in each call area. VK1 and VK2 will count as separate areas for awards. There will be no outright winner for Australia. Further Certificates may be awarded at the discretion of the Federal Contest manager.

The Division to which the Trophy will be awarded shall be determined in the following way.

To the average of the top six logs shall be added a bonus arrived at by adding to this average the ratio of logs entered to the number of State Licensees (excluding Limited Licensees) multiplied by the total points from all entries in sections (a), (b) and (c) of Rule 1.

Average of the top six logs +

Logs Entered	Total of Points
State Licensees ×	from all Entrants
exclud. 2 Calls	Sec. (a) (b) (c)

VK1 scores will not be included with VK2 nor VK8 with VK5.

Acceptable logs for all sections shall show at least five valid contacts.

The trophy shall be forwarded to the winning Division in its container and will be held by that Division for the specified period.

RECEIVING SECTION

1. This section is open to all Short Wave Listeners in Australia, but no active transmitting station may enter.

2. Contest times and loggings of stations on each band are as for transmitting.

3. All logs shall be set out as shown in the example. The scoring table to be used is the same as that

used for transmitting entrants and points must be claimed on the basis of the State in which the receiving stations are located. A sample is given to clarify the position.

It is not sufficient to log a station calling CQ—the number he passes in a contact must be logged.

It is not permissible to log a station in the same call area as the receiving station on the m.f. and h.f. bands 1.8-30 Mcs., but on bands 52 Mcs. and above such stations may be logged, once only per band, for one point. See example given. VK1/VK2 and VK5/VK8 are considered to be the same area for scoring purposes.

4. A station heard may be logged once on phone and once on C.w. for each band.

5. Club receiving stations may enter for the Receiving Section of the Contest, but will not be eligible for the single operator award. However, if sufficient entries are received a special award may be given to the top receiving station in Australia. All operators must sign the Declaration.

AWARDS

Certificates will be awarded to the highest scorers in each call area. Further Certificates may be awarded at the discretion of the Federal Contest manager.

TRANSMITTING OPEN — VHF/UHF ONLY SECTION (SECTION E)

Additional Notes

1. This section is being introduced this year in answer to the request by many Amateurs that provision be made for participation by Limited Licensees and other VHF/UHF operators. It is in the nature of an experiment and because of this logs entered for section (e) will not be considered in the determination for the Trophy winner at this juncture. In the light of future experience, response to this section by those it is intended to interest, and comments from all interested parties, other additions and changes may be made.

2. All intrastate contacts in the bands above 52 Mcs. will count for one point. Interstate contacts will be valued as in the table for MF/HF contacts including the bonus 25 points for the first contact with each new call area (v.h.f./u.h.f. only).

3. Entrants may submit logs for one Transmitting Section other than (e) and interstate VHF/UHF contacts may be included in both logs.

4. Logs must be set out in the standard manner prescribed.

AWARDS

Certificates will be awarded to the highest scorer in each call area.

Note I—The Federal Contest manager emphasises the need for strict observance of Rule 9 in the Transmitting Section and Rule 3 in the Receiving Section.

Note II—Note that the use of G.M.T. is required in accordance with Institute Policy to encourage the use of G.M.T. by Australian Amateurs.

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ROSS HULL MEMORIAL V.H.F. CONTEST 1964-65 RESULTS

The Federal Contest Committee takes pleasure in presenting herewith the results of the 1964-65 Ross Hull Memorial V.H.F. Contest.

We would like to thank those contestants who submitted suggestions and comments on the contest. All of these will be extracted and sent to Federal Executive for further consideration. The comments were many and various and a few selected at random, are included in this summary for the interest of contestants.

VK2—I do not favour the suggestion that a 7 or 9 day period of operating be selected instead of the present period. I consider that this would greatly reduce the number of stations participating. Contest to be limited to 52 and 144 Mcs. That the phone section be open to only "Z" calls. The suggestion of a 9 day log is a good one.

VK3—I can see nothing wrong with the way the contest is run and hope that it is run the same way in the future. The scoring table encouraged the use of the 432 Mcs. band, and surely this is the purpose of such a contest, to increase the use of the v.h.f. bands. I enjoyed the contest, but think that a month is too long and that logs should be limited to a 7 day period. The scoring table for the 432 Mcs. band is unrealistic, as it is very similar to the 144 Mcs. band propagationwise.

VK4—I'm very much in favour of the present duration of the contest being retained and would just as soon stick with the old method of scoring using the full four weeks. One thing I am very happy with is the way the current Scoring Table is set up, by far the fairest so far.

VK5—Points should be allotted for contacts on 6 and 2 metres otherwise the country stations have an unfair advantage and local interest and activity is less. A certificate should be awarded for the best 7-day period log submitted in addition to the present awards. That the contest be shortened to the choice of the contestant, to say a nine-day period within a "limit" time as laid down by Contest Committee, December-January.

VK6—The length of the contest should remain a month but a log for a nine-day period be required.

VK7—No comments.

VK8—I think that the duration of the contest is ideal and would not like to see it shortened, and am quite happy with the rules as they are.

It is not possible to list all of the comments in detail, but contestants should be able to realise that there is a considerable difference of opinion on the matters listed. One of the items passed at the last Federal Convention was the inclusion of a sub-section in the Ross Hull Memorial V.H.F. Contest for an award to be given to the best log for a two-day period. This may meet with approval by some and disapproval by others. It would be almost impossible to have a set of rules to suit everyone.

This year's honours go to **VK3ZER** R. W. Wilkinson with a score of 5,787 points, which under the circumstances was a very good effort.

In conclusion we would like to congratulate the other award winners and thank those who submitted logs and suggestions.

Federal Contest Committee, W.I.A.

TROPHY WINNER

VK3ZER—R. W. Wilkinson .. 5787 pts.

AWARD WINNERS

Section A—Transmitting, Open

VK2ASZ—R. L. Lear	2240 pts.
VK3QV—D. H. Rankin	108 "
VK4PU—J. D. Purdon	1822 "
VK5CL—H. M. Blythe	266 "
VK6LK—C. J. Kosina	1634 "
VK8KK—D. A. McArthur	4312 "

Section B—Transmitting, Phone

VK1VP—E. Penikis	1386 pts.
VK2ZFB—A. F. Birch	2220 "
VK3ZER—R. W. Wilkinson	5787 "
VK4ZLG—C. M. Lloyd	3378 "
VK5ZKR—C. M. Hutchesson	4245 "
VK6ZCN—A. L. Martin	2434 "
VK7ZAH—K. J. Hendricks	1626 "
VK8ZMD—A. M. Dunn	180 "
ZL1AMN—D. A. Johnston	330 "
ZL2APC—H. Burton	340 "
ZL3AAU—J. G. Miller	950 "

Section C—Receiving

WIA-L2211—R. C. Abernathy, Miranda	466 pts.
WIA-L1338—G. N. Earl	78 "
WIA-L5049—D. De Cean	1404 "

INDIVIDUAL SCORES

Section A

VK2ASZ—Blaxland	2240 pts.
ZTR—Bega	470 "
VK3QV—East Malvern	108 "
VK4PU—Woombye	1822 "
VK5CL—South Plympton	266 "
VK6LK—Ardross	1634 "
6MM—Nedlands	552 "
VK8KK—Alice Springs	4312 "

Section B

VK1VP—Canberra	1386 pts.
VK2ZFB—St. Mary's	2220 "
Z2LP—Armidale	2106 "
Z2CF—Croydon	1269 "
Z2AS—Inverell	794 "
Z2CT—Whitebridge	780 "
Z2DT—Cambewarra	688 "

VK2ZFS—Goonellabah	570 pts.
Z2AE—Armidale	352 "
Z2RE—Cooma	260 "
Z2WM—Kahibah	226 "
Z2GJ—Kyogle	218 "
Z2AZ—Nowra	154 "
VK3ZER—Ballarat East	5787 "
Z2NS—Beaumaris	1410 "
Z2AE—Glenroy	1361 "
Z2BF—Altona	724 "
Z2NB—Camberwell	320 "
Z2GP—Fawkner	396 "
Z2OP—Moorabbin	392 "
Z2MS—Frankston	372 "
Z2RY—North Balwyn	276 "
Z2KU—Kilmore	162 "
Z2DA—Mount Waverley	60 "
Z2BD—Ormond	58 "
VK4ZLG—Wacol	3338 "
4RO—Ayr	1524 "
4ZWS—Bundaberg	698 "
4ZWR—Bundaberg	32 "
VK5ZKR—Yahl	4245 "
5ZDX—Oaklands Park	2008 "
5ZMJ—Port Pirie	1706 "
5ZJH—Gawler Rail	1592 "
5ZEJ—Forreston	1506 "
5ZIK—Yorketown	1332 "
5ZGF—Plympton	1250 "
5ZTF—	1217 "
5ZBR—Gawler East	1110 "
5ZJH—Somerton Park	1069 "
5EF—Gawler	316 "
5ZFS—Parkside	110 "
5TN—King's Park	86 "
VK6ZCN—Bunbury	2434 "
6ZDS—South Perth	2022 "
VK7ZAH—Ulverstone	1626 "
7ZQA—Lenah Valley	934 "
7ZTX—Newtown	588 "
7ZAA—Burnie	526 "
7ZAC—Lenah Valley	212 "
7ZBK—Glenorchy	38 "
VK8ZMD—Darwin	180 "
ZL1AMN—Auckland	330 "
ZL2APC—Eastbourne	340 "
ZL3AAU—Christchurch	950 "
ZL3RK—Christchurch	510 "

Section C

WIA-L2211—R. C. Abernathy, Miranda	466 pts.
WIA-L2138—C. R. Christian-son, Booragul	22 "
WIA-L1338—G. N. Earl, Black Rock	78 "
WIA-L5049—D. De Cean, Brighton	1404 "

CALL BOOK MAGAZINE

The Federal Treasurer, W.I.A., has several copies of the 1964 Call Book Magazine for sale at the bargain price of £1 each, post free.

There are two editions:—

- (1) American Amateurs.
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GALAXY V. . . .	£240	
240v. A.C. Supply with Speaker . .	£32	
300w. Aztec D.C.-D.C. 12v. Supply	£45	
500w. Aztec D.C.-D.C. 12v. Supply	£55	
500w. Galaxy D.C.-D.C. 12v. Supply	£55	

Also the following used equipment—

SWAN SW120 for 20 metres . . .	£90 and £100
SWAN SW120 tribanded 80-40-20 metres	£130
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Also available accessories of own design as crystal calibrators, SWR/power output meters, external second VFO's, crystal filters, etc. Further components that are hard to get, verniers (type Swan SW 350), vernier dials, trimmer air condensers, with extension shafts, ceramic PTT microphones, etc.

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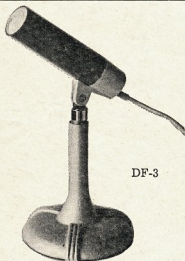
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VK-ZL-OCEANIA DX CONTEST 1964 RESULTS

AUSTRALIA

C.W.— Call	80	40	20	15	Total
VK2EO	—	4035	5515	—	9650
2GW	—	3210	3525	2670	9405
2APK	—	2405	4250	1660	8315
2RA	—	1720	3695	1900	7315
2VN	—	1840	4735	570	7145
2QL	210	2235	1930	1510	5885
2AAH	—	—	1875	—	1875
VK3AXK	—	3165	2070	1040	6275
3MR	—	—	5745	—	5745
3DQ	—	1575	1500	900	3975
3XB	—	3280	265	—	3545
3SR	—	1505	1230	—	2735
3RJ	—	—	750	165	915
3QV	—	—	—	530	530
3TL	—	—	—	—	Check
VK4LT	—	—	4515	2315	6830
4SD	—	—	3955	—	3955
4WO	—	—	1020	—	1020
VK5NO	110	5950	7435	2390	15885
5RX	—	—	2445	—	2445
VK7DK	—	1725	3415	—	5140
VK9GC	—	—	1870	1740	3610
9RB	—	—	790	—	790

Band Leaders—C.W.

80 Metres:	VK2QL	—	210	points
	VK5NO	—	110	"
40 Metres:	VK5NO	—	5950	"
	VK2EO	—	4035	"
	VK3XB	—	3280	"
20 Metres:	VK5NO	—	7435	"
	VK3MR	—	5745	"
	VK2EO	—	5515	"
15 Metres:	VK2GW	—	2670	"
	VK5NO	—	2390	"
	VK4LT	—	2315	"
All Bands:	VK5NO	—	15885	"
	VK2EO	—	9650	"
	VK2GW	—	9405	"

PHONE—

Call	40	20	15	Total
VK2APK	1030	4575	890	6495
2WD	—	4465	—	4465
2AKF	710	1355	340	2405
2MR	—	1580	—	1580
2CM	—	1540	—	1540
VK3ATN	2200	6605	1875	10680
3XB	845	300	135	1280
3QV	—	—	1170	1170
3TL	—	—	—	Check
VK4LT	—	5620	660	7385
4DO	—	915	—	915
VK5MS	—	9860	—	9860
5GG	—	2865	—	2865
5FT	—	1520	—	1520
VK7DK	—	2800	—	2800

Band Leaders—Phone

40 Metres:	VK3ATN	—	2200	points
	VK2APK	—	1030	"
	VK3XB	—	845	"
20 Metres:	VK5MS	—	9860	"
	VK3ATN	—	6605	"
	VK4LT	—	5620	"
15 Metres:	VK3ATN	—	1875	"
	VK3QV	—	1170	"
	VK2APK	—	890	"
All Bands:	VK3ATN	—	10680	"
	VK5MS	—	9860	"
	VK4LT	—	7385	"

VK LISTENERS' SECTION

L2033	—	375
L3138	—	2605
L4018	—	1545

L5065	—	3470
L5067	—	330
L6021	—	8445
BERS195	—	4965

NEW ZEALAND

C.W.— Call	80	40	20	15	Total
ZL1ABZ	—	1040	5235	2150	8425
1ARY	—	—	5395	—	5395
1QW	—	—	110	240	350
ZL2GX	—	5760	—	—	5760
ZL3IS	—	—	525	—	525
ZL4GA	—	3660	2410	2895	8965
4BO	—	2860	575	1435	4870
4JF	—	1520	190	—	1710
ZL1HY	—	—	—	—	Check

Band Leaders—C.W.

40 Metres:	ZL2GX	—	5760	points
	ZL4GA	—	3660	"
20 Metres:	ZL1ARY	—	5395	"
	ZL1ABZ	—	5235	"
15 Metres:	ZL4GA	—	2895	"
	ZL1ABZ	—	8425	"
	ZL4BO	—	1435	"
All Bands:	ZL4GA	—	8965	"
	ZL1ABZ	—	8425	"
	ZL2GX	—	5760	"

PHONE—

Call	40	20	15	Total
ZL1HA	—	6990	—	6990
1ABZ	165	6420	—	6585
1AGO	1870	—	—	1870
1HY	—	—	—	Check
ZL2GX	—	2475	—	2475
ZL3AB	—	2130	—	2130

Band Leaders—Phone

40 Metres:	ZL1AGO	—	1870	points
	ZL1ABZ	—	165	"
20 Metres:	ZL1HA	—	6990	"
	ZL1ABZ	—	6420	"
	ZL2GX	—	2475	"
All Bands:	ZL1HA	—	6990	"
	ZL1ABZ	—	6585	"
	ZL2GX	—	2475	"

ZL LISTENERS' SECTION

ZL149	—	6525
ZL190	—	6165
ZL292	—	370

OVERSEAS

C.W.—

North America					
H16WSR	279	pts.	K16EC	1455	pts.
V16SA	15		W16ET	1134	
K16VY	203		W16D	968	
W16MFX	858		W16WPG	140	
W16SKD	268		W16BHU	32	
W16HL	Check		K5EVR	2	
W16VCD	726	pts.	K7AL	1092	
W16HOS	45		W16DJU	100	
W16WZQ	1880		W16JIN	2730	
W16BPF	568		W16SK	2000	
W16HDL	84		W16DGP	280	
W16EPQ	4687				

South America

HK3RQ	—	1288	pts.	PY2QQ	—	78	pts.
HK3AVR	—	660	—	PY2CQ	—	72	—
OA4GK	—	498	—	—	—	—	—

Asia

J16EUV	—	6324	pts.	J16AKL	—	1120	pts.
J16D1A	—	312	—	J16ATD	—	3003	—
J16IMN	—	125	—	J16JCK	—	80	—
J16PMT	—	32	—	J16CLO	—	484	—
J16JZU	—	4	—	J16BY	—	232	—
J16DRO	—	867	—	J16AMR	—	113	—
J16JHL	—	14	—	J16ASU	—	8	—
J16AQR	—	14	—	J16ACH	—	144	—
J16AACH	—	14	—	—	—	—	—

Oceania

D16UGF	—	568	pts.	V16IB	—	4620	pts.
H16HAZ	—	96	—	Z16IAR	—	1140	—

Europe

D17AA	—	754	pts.	O16WK	—	112	pts.
DM2AND	—	802	—	O16RP	—	60	—
DL1IF	—	315	—	O16PT	—	44	—
DM3NBL	—	64	—	O16PN	—	40	—
DM3BD	—	32	—	O16X	—	24	—
DM2ATD	—	40	—	O16XZ	—	8	—
FT1M	—	40	—	O16VY	—	2	—
GA2CP	—	1344	—	O16AC	—	Check	—
GA2PKM	—	802	—	O16AS	—	60	—
GA2DC	—	583	—	O16KGD	—	48	pts.
GA2CN	—	329	—	O16CBR	—	28	pts.
GA2BK	—	1329	—	O16X	—	24	—
H16BK	—	408	—	O16ADM	—	12	—
IT1AL	—	650	—	O16DB	—	8	—
IT1AQ	—	8	—	O16SK	—	2	—
O16IRZ	—	520	—	O16IO	—	2	—
OZ1PM	—	105	—	O16KDT	—	2	—
OZ1GC	—	85	—	O16JUL	—	2	—
OZ1W	—	70	—	PA16LOV	—	189	pts.
OZ1H	—	72	—	PA16WAC	—	104	—
OZ1LO	—	68	—	SM16AG	—	830	—
O16BRB	—	637	—	SM16BN	—	24	—
O16BX	—	488	—	SM16CE	—	1080	—
O16HP	—	328	—	SM16LL	—	504	—
O16SH	—	288	—	SM16SF	—	2	—
O16BH	—	256	—	SM16MX	—	Check	—
O16BU	—	248	—	SM16QY	—	189	pts.
O16AH	—	246	—	SM16MS	—	2	—
O16TC	—	246	—	YU16CD	—	60	—
O16YV	—	144	—	—	—	—	—

U.S.S.R.

UC1AR	—	30	pts.	UA1KAB	—	2	pts.
UC1BV	—	30	—	UV1T	—	2	—
UP1UK	—	18	—	UA1BR	—	2	—
UP1PT	—	8	—	UA1F7	—	1	—
UQ1GA	—	56	—	UA1FA	—	288	—
UB1GK	—	36	—	UA1KX	—	65	—
UB1SC	—	48	—	UW1CS	—	42	—
UB1SKX	—	10	—	UA1BRH	—	14	—
UT1CS	—	96	—	UA1KX	—	2025	—
UA1KIL	—	96	—	UA1SO	—	550	—
UA1ND	—	56	—	UA1AG	—	224	—
UA1MI	—	472	—	UA1OTD	—	72	—
UA1KAO	—	30	—	UB1LS	—	60	—

PHONE—

D16UGF	—	477	pts.	V16IB	—	1250	pts.
KH16PW	—	2563	—	V16ZD	—	5396	—
KH16BJ	—	2030	—	V16KE	—	90	—
W16DVC/KG	—	18	—	Z16IAR	—	31	—

South America

HK16AHT	—	530	pts.	OA4GK	—	100	pts.
HK3RQ	—	336	—	YV1AKP	—	315	—
OA4KY	—	240	—	—	—	—	—

North America

H16WSR	—	804	pts.	W16SK	—	1955	pts.
H16JC	—	368	—	W16LS	—	576	—
KP16K	—	434	—	K16VR	—	3234	—
KP16BN	—	336	—	K16VP	—	182	—
PY2CQ	—	182	—	W16WPG	—	80	—
W16MFX	—	70	—	W16JIN	—	336	—
—	—	—	—	W16LB	—	136	—

Asia

EP16Q	—	630	pts.	J16CPZ	—	2	pts.
HL1TT	—	120	—	J16AOU	—	2	—
SM16LO	—	980	—	J16JNP	—	1440	—
J16IHC	—	240	—	J16JQ	—	154	—
J16IMN	—	36	—	J16JNP	—	435	—
K16ZB	—	184	—	U16SKA	—	96	—
J16DNA	—	32	—	—	—	—	—
J16AQR	—	21	—	—	—	—	—

Europe

D16JQT	—	693	pts.	O16SM	—	138	pts.
DL1BK	—	490	—	O16ZBH	—	102	—
D16JQA	—	490	—	O16ZC	—	50	—
DL1DW	—	343	—	O16P1N	—	24	—
DL1DX	—	228	—	O16YV	—	14	—
DL1EN	—	Check	—	O16I1H	—	2	—
GR1PO	—	1462	pts.	O16AD1	—	52	—
G16X	—	679	—	O16K1N	—	52	—
DL1DOB	—	48	—	O16Z1N	—	8	—
IT1TA1	—	48	—	PA16BO	—	369	—
L16SYE	—	36	—	PA16GMU	—	147	—
O16RZ	—	60	—	SM16AGD	—	1680	—
DL16WR	—	792	—	SM16BQ	—	1287	—
OZ1SK	—	10	—	SM16F1	—	238	—
OZ1SK	—	2	—	SM16F2	—	32	—
U16IC	—	350	—	SM16C	—	80	—
U16DKR	—	8	—	SM16FE	—	44	—

W.I.A. YOUTH RADIO SCHEME

ANNUAL REPORT TO FEDERAL CONVENTION – EASTER, 1965

GENTLEMEN: It is with great pleasure that I report to you on the operations of the Youth Radio Scheme during the 1964-65 period. In the eastern States this has been a period of real progress and major effort by all concerned with the implementation of this aspect of the Education Act. Unfortunately, progress has not been equally pleasing in some Divisions but this situation is normal in voluntary and impecunious organisations such as ours. We must accept the unfavourable aspects philosophically and the successful developments with determination to do better in the future.

During this year a great amount of correspondence has taken place with the various Divisional Supervisors of the Youth Radio Scheme in Australia, New Zealand, Canada, South Africa and Great Britain, which has been investigating the possibility of co-operation. The Manager of the R.S.G.B. requested that the Wireless Institute should furnish full details of our Australian project, and also of the proposed syllabus, and the most recent and urgent revision of all our syllabuses and Certificate Conditions. However, this task is fully anticipated by the R.S.G.B. and the information was air-mailed to the R.S.G.B. for consideration by its Youth Education Committee. After a long delay a letter was received from the R.S.G.B. which appears that the English Scheme will involve the use of night school classes which operate under the educational supervision of the Department of Education. The concept from our Scheme, which involves Radio Club activity in day-time secondary schools as the principal method of instruction, will be applied to watch the progress of the British methods and to assess the relative merits of the two.

different systems. These negotiations have been conducted with other Australian youth organisations. The secretary of the Duke of Edinburgh's Award Committee has been invited to discuss aspects of this new youth scheme. The handbook was drawn up to suit English conditions and the committee feel that an Australian version will have to be prepared to meet local conditions. Accordingly, submitted a detailed scheme, based on our Certificate system, to the Duke of Edinburgh's Award Committee. The proposals envisage three sets of conditions to be met for the award and cover the "Project" requirements. It is anticipated that some finality will be reached on these negotiations before long. I propose to discuss the results of our latest visit which will include the relationships which exist between the Duke of Edinburgh's Awards and our Certificate system. We have also been invited by the Committee has seen fit to seek advice from our Youth Radio Scheme indicates that our efforts have met with approval and recognition from the Government, the limits of the W.I.A.

The Boy Scout Movement is currently reviewing the Proficiency Badge requirements and the various suggestions which have been forwarded to their National Headquarters are still under consideration. Mr. Ken Matchett, VK3TL, has been associated with these deliberations, which unfortunately have been very slow to reach a finality. However, it is anticipated that within some final decisions will be reached and mutual recognition of awards will be authorised by the Scout movement.

The Boys' Brigade, a Church organisation of wide distribution, has examined various suggestions which I have submitted for consideration at its recent Federal Convention in Adelaide. It is anticipated that, as a result, there will be close liaison between the Y.R.S. and the Brigade and that the latter body will introduce additional proficiency awards—badges and certificates—to recognise Radio training.

The Australian Air League is another Australian youth organisation which is interested in our work and several discussions have taken place to show considerable interest for future co-operation. I have a special interest in this organisation, of which I was one of the earliest members and which I received my proficiency badge, syllabus which has, with some modifications, been in operation for about 30 years. I was pleased to receive an invitation to receive the award of the Youth Radio Scheme to the opening of the Air League's new offices at Petersham on Saturday, 10th April. Continual efforts are being made to maintain contact with the personnel with the training officers of these

youth movements and to point out the mutual benefits which could accrue from some degree of co-operation and recognition of each other's awards. Most of these negotiations are approaching finality and next year's report will indicate the nature and extent of the co-operation which has been achieved. Of course, there are other youth movements which still have to be contacted and time is the only factor which has prevented this. However, these discussions indicate clearly that the real reason for the success of the activity which the Youth Radio Scheme offers to young Australians.

A pleasing feature of this year's operations has been in the number of Youth Radio Scheme members who have gained Amateur status. Of the 100 members of the Society (Limited) while they were still at school, 40 of these were gained by boys in fifth and fourth forms, but Gary Tippett of St. Albans School, Herts., was the first third form student to gain this distinction. In addition, a number of Associate Members from the University of Cambridge have joined the Wireless Institute. It is evident, therefore, that the stated aim of the Youth Radio Scheme—to increase the membership of the Society—has been achieved, perhaps in spectacular numbers, but in a steadily increasing volume. However, I still feel that our Scheme can never realise its maximum benefit unless we can attract more members from the schools, where Science teachers, Manual Arts teachers and leaders of non-school clubs can gain limited transmitting privileges with less effort and at less cost than the present system entails.

In New South Wales the impact of the new Wyndham Scheme of secondary education has been such that it is probable that schools would have undertaken the formation of clubs under the old system have been deterred by the vast amount of re-organisation that the new Scheme has necessitated. However, from a long-range point of view, it is possible that the Scheme may be of ultimate benefit because it has made clubs more important than ever.

Also, the new Science Courses prescribed for fifth and sixth years include greater attention to electronics than did the old courses. This may draw more of the attention of teachers and students to extra-curricular Radio Club activities to reinforce the new Science Courses.

One of the stated objectives of the Youth Radio Scheme. It is noteworthy that increasing numbers of Science teachers are forming clubs in their schools. In the early days of the Scheme hardly any Club Leaders were members of Science staffs. The Youth Radio Scheme has changed this. In all new clubs are being organised by Science teachers. Much of this is due to Mr. Henderson, Headmaster of the Sydney Technical College, who urged all his advanced year students to participate in our Scheme. Recently he organised the Sydney Teachers' College, Eastern College, to form a new Youth Science Teacher-Trainees, who will be posted to State High-Schools at the beginning of 1966. Each of these will be expected to run a Radio Club activity and fully aware of our Y.R.S. methods, courses, examinations and Certificates. The New South Wales Divisional Board of Secondary Education has been very supportive of Mr. Henderson's efforts in this matter and has made available a FREE A.O.C.F. Correspondence Course for the teachers.

Mr. Henderson. It is anticipated that 1966 will see a great forward move in the Youth Scheme as these young teachers move into the schools. The Youth Radio Scheme has received the approval which the N.S.W. Education Department has given to Mr. R. Pearson, Manual Training Teacher, Phillip Island, and Mr. J. Parramatta, to conduct a Radio-Craft Course for Second Form boys following our Y.R.S. certificate syllabus. This could lead to further expansion of the Youth Radio Scheme. A Section of the Education Department and, in itself, demonstrates the value and versatility of the Youth Radio Scheme in relation to such a wide variety of youth situations.

Another pleasing feature of this year's progress is seen in the increasing numbers of Radio Club boys entering the electronics industry as apprentices, trainees and cadets. Others have proceeded to Science courses at various universities and it is reasonable to assume that their vocational choices have been motivated by their participation in Youth Radio Scheme activities. To mention just one instance, Mr. Keith Howard (Westlakes Radio

Club reports that ten of his club members have been placed in various electronics vocations. Unfortunately, Y.R.S. resources are insufficient to supply training for all members who move from clubs to the electronics industry, but already employers are becoming more and more dependent on Y.R.S. personnel officers reveal that they are alarmed by the fact that only a small proportion of the graduates of the Y.R.S. are able to welcome any applicants of suitable academic standard who can produce our Y.R.S. Radio Engineering Certificate. The Y.R.S. is interested in and encourages the development of interests and skills in New South Wales club leaders are directed to "groom" their job-seeking members and to encourage them to take advantage of the Y.R.S. training in radio or electronic constructional projects as evidence of skill and knowledge. Former Y.R.S. members are encouraged to attend the Y.R.S. Radio Apprentices, in D.C.A. and P.M.G. Training Schools, in private electronic firms and apprenticeship cadetships. Encouraging this situation may be, we have no reason to suppose that this may be a disadvantage for this community nor must we slacken our efforts. At this juncture I must draw attention to the fact that the Y.R.S. is now "The Corners" which showed Chinese children of elementary school age receiving instruction in the Y.R.S. and that the Y.R.S. is now active in the Chinese science laboratories at secondary school level made our local efforts look pitifully small. The Y.R.S. is now a long way long way to go in this field of Science Education and this angle, I suggest, might be one to stress in further representations for Novice Licenses.

The U.S.S.R. Youth Training Scheme and the Novice licensing systems of U.S.A., India and Israel make our traditional British attitudes obsolete and encourage young people to take the Radio Proficiency Certificate Scheme which operates within the Y.R.S. is progressing satisfactorily. There is considerable variation in the number of schools offering the Certificate in Queensland, New South Wales, Victoria and to a limited extent in South Australia the Certificate system is functioning. This year has seen the award of the first Radio Proficiency Certificate and the issue of the first new Radio Telephone Operator's Certificate. In Victoria, the first primary school boys and the first girls have been awarded their respective Radio Proficiency Certificates. It was pleasing to see the latter publicised on the front cover of a recent issue of "Amateur Radio" It is interesting to note that the Y.R.S. has the honorific title of "The National Amateur Radio Certificate" and club members take advantage of the school vacancies to study for the A.O.C.P. certificate. It is hoped to circulate the later certificates in our Y.R.S. series.

Although Y.R.S. Certificates are available to members of adult clubs, mainland adult clubs have not taken advantage of this service. The only club which has submitted adult candidates is that on Christmas Island. It is pointed out that many adult A.O.C.P. students are those who have been away from school for many years and who lack the knowledge of examination questions under stringent conditions have faded during the years. The Certificate scheme, with its graded levels of testing, could well serve to re-develop examination skills and thereby enhance candidates' confidence and success in M.M.E. examinations. Instructors in adult clubs might give consideration to this matter.

The interchange of Y.R.S. Newsletters and Bulletins is a worthwhile development during the past year. The Y.R.S. Bureau has now started this system of disseminating Y.R.S. information and VK3, VK4 and VK5 have followed suit. The Y.R.S. Bulletin is a monthly bulletin forms part of the general Divisional Bulletin, whereas elsewhere separate Y.R.S. Newsletters are published. The Y.R.S. Bulletin N.S.W. Newsletter carries various items which would normally be found in a Federal Y.R.S. Newsletter. The Y.R.S. Bulletin is published at the same time and effort this procedure has been followed. From time to time other information is included in the Y.R.S. Bulletin such as the mailing lists. Details of the Duke of Edinburgh's Award Scheme, Junior recruiting in the U.S.S.R. and the A.S.A. and A.S.A. of the U.S.S.R. Youth Training Scheme are some of the items which have accompanied the Bulletin.

Youth Radio Scheme activities are well publicised in both "Amateur Radio" and "Radio, Television and Hobbies" by Mr. Ken Mattie (VK1KM) and Mr. Pierce Healy (VK2APQ) respectively as correspondents. Thanks are due to both these gentlemen and to the editors

of these magazines for their continued support during the year. Despite their efforts, one feels that there are many amateurs who know vaguely that the Y.R.S. exists but take not interest in furthering this institute activity. As is usual in all voluntary organisations the real work is left to the few willing workers and, with the rapid expansion of this scheme, it is becoming evident that more assistance is required for a variety of tasks associated with the administration of this scheme. In fact, it is not too far to go to state that there could well be a full-time job for some person accustomed to handling correspondence to type and mail and to exercise a great deal of initiative in furthering this institute activity. However, this scheme is beyond the realms of probability at this stage.

In the N.S.W. Division a large range of inter-club competitions has been presented for the 1965 season. Prizes for money and radio components have been specified, and it is hoped that these incentives will encourage members to participate and club leaders to urge their charges to attempt these contests. The Interstate Morse Code Contest had to be abandoned because of lack of support from other Divisions. However, New South Wales will conduct its own championship as soon as practicable. It is hoped that at some later date a Australia-wide Morse Contest will be possible.

This session has seen the introduction of the Radio Instructors' Certificates, which were specified on the original drafts of the scheme but were not implemented previously for various reasons. These certificates are now available for distribution to successful candidates in all divisions. It must be noted that these awards are NOT easily obtained, but represent instructional experience and effort over a considerable period. Congratulations are due to Mr. Keith Howard (VK3AKX) of

Westlakes Radio Club and to Mr. Ken Mattei (VK1KIM) of Lyneham High School on being the first club leaders to achieve these distinctions.

It has been found that staff changes at the end of each year cause havoc in the club situations in each State. Accordingly, it has been found necessary in New South Wales, at least, to require clubs to register annually. Club Registration Certificates are available for distribution to State Supervisors for this purpose. The Victorian Division was the first to use this system and it is worth the effort. Other Divisions should be encouraged to adopt this method.

Critics of the Youth Radio Scheme stress that hobby radio tends to interfere unduly with the academic studies of members. This may be true in certain instances but the chances are minimised by the fact that most club leaders are school teachers who should be in a position to assess whether certain members are neglecting school work by excessive concentration on radio. A few well-chosen words or other means of persuasion can usually rectify this position, whereas, before Y.R.S. was introduced, excessively enthusiastic hobbyists had no such guidance and may, in certain cases, have suffered academically. At this stage I might mention that four young people in New South Wales who gained A.O.C.F. status while still at school also gained excellent Leaving Certificate passes and Commonwealth Scholarships. Three of them were special guests of the Institution of Radio and Electronic Engineers at the Dunsell Memorial Lecture, delivered by the Duke of Edinburgh at the University of New South Wales. The fourth member of the successful quartet has been debarré from attendance because of her sex! However, she has enrolled at the University and hopes to become a technician and presumably Radio Club Leader of a transmitting type club.

With increasing numbers of boys and girls participating in Y.R.S. I suggest that State Supervisors should express opinions regarding the desirability of having lapel badges made. It is suggested that, should agreement be reached, the present overall "motif" should be retained with "Youth Radio Scheme" replacing the "Radio Club" development scheme, too, might be varied for the junior members. Federal executive might then arrange for manufacture and sale to Divisions at an appropriate price.

I feel, too, that the position of Federal Co-ordinator is one which should be shared by placing the duties of the office on lines similar to those observed by all other State Supervisors. I feel that one person in office can become too dogmatic, too intolerant of new ideas and the "new broom" technique has much to recommend it. In addition, combining the duties of Federal Co-ordinator and State Supervisor for N.S.W. has become far too onerous and I should like, therefore, to stand down while other Divisions take their share of the burden in rotation.

I should like to express very sincere thanks to those who have eased the load by co-operation, by suggestion, by expression of opinions, by willingness to try new ideas and by the enthusiasm shown by almost all frequently to advise what has been happening elsewhere. Such co-operation has not, unfortunately, been of uniform standard and while I do not propose to specify any Divisions for lack of support, I feel that they are missing out on the undoubted advantages which accrue from developing an enthusiastic Youth Radio Scheme to provide fresh blood to replace the ageing membership.

R. G. Black (VK3YA),
Federal Co-ordinator, Youth Radio Scheme.

NEW CALL SIGNS

MARCH, 1965
VK3GK—R. B. Digby, 15 Lennox Street, St. Mary's.
VK2GJ—A. Atkins, "Hlawong," Thurlow Avenue, Nelson Bay.
VK2HP—N. C. Nugent, 24 Carrington Parade, Harbord.
VK2IT—D. Woollett, 12 Broadarrow Road, Beverly Hills.
VK2UV—G. A. Murray, 1 Gladstone Street, Sydney.
VK2AHL—A. S. Heckenberg, 36 Lennox Street, Richmond, I.W.
VK2AZU—T. E. Woolley, 4/148 Campbell Parade, Bondi Beach.
VK2BKK—1st Kyeemagh Sea Scouts Youth Club, Station: Scout Hall, Bestie St., Kyeemagh; Postal: 23 Caranmore Avenue, Kyeemagh.
VK2ZBT—N. R. Crosby, 92 Abbotsford Road, Melbourne.
VK2ZDD—C. J. Jones, 706 Forest Road, Peakhurst.
VK2ZEN—E. M. Norris, 16 Koorabel Street, Lufkin.
VK2ZHD—H. J. D. Duncan, 15 Aloha Street, Mascot.
VK2ZHU—M. A. Harrison, 14 Market Street, Rockdale.
VK2HJR—P. Halpin, 19 Morton Street, Waverley.
VK2ZNY—B. D. Bannister, 193 Wangee Road, Greencare.
VK2ZSQ—J. Potts, 3 Forrest Street, Oak Flats.
VK3—J. V. McCartney, Flat 6, 23 Docker Street, Elwood.
VK3AAO—A. L. Osborne, Station 119 Arundel Street, Benalla; Postal: P.O. Box 15, Benalla.
VK3AED—J. R. Walker, Jordan Road, Point Lonsdale.
VK3AIB—B. E. Tucker, 49 Panoramic Road, North Balwyn.
VK3ZGQ—D. B. Judd, 23 Ralton Avenue, Glen Waverley.
VK3ZJH—J. A. Horan, 2 Harry Street, West Brunswick.
VK3ZHY—A. R. Webb, 60 Stevens Street, Portlinton.
VK3ZID—J. C. Livsey, 27 Maude Street, Shepparton.
VK3ZJZ—J. J. Illif, 25 Weatherston Road, Seaford.
VK3ZPO—D. P. James, 133 Victoria Road, East Hawthorn.
VK3ZPF—P. Schmitt, 418 Nepean Highway, Parkdale.
VK3ZPU—B. D. Ritchie, 1347 Gregory Street, Wendouree.

VK3ZYE—I. R. Prior, 47 Tannock Street, North Balwyn.
VK4BW—Bundaberg Amateur Radio Club, Station: Avoca Street, West Bundaberg; Postal: Post Office Box 129, Bundaberg.
VK4SI—J. E. Spencer, Ann Street, Woombie.
VK4ZAB—J. A. Berry, 34 Merchase Street, Rockoolong.
VK4ZCB—C. C. Chapman, 42 Dempsey Street, Mt. Isa.
VK4ZKD—C. H. Dredge, 16 Brilliant Street, Mt. Isa.
VK4ZSN—N. D. Stallman, Deerpark Road, Brookfield.
VK5AD—R. C. Jellett, Station: Beach Road, Beachport; Postal: P.O. Box 1, Hynam.
VK5BD—D. S. Brown, 14 Lachlan Avenue, Woodville West.
VK5TO—G. M. Taylor, 16 Fairmont Street, Black Forest.
VK5ZAG—J. D. Churcher, 41 Wood Street, Rockhampton.
VK5ZKB—K. R. Burrows—17 Railway Road, Blackwood.
VK5ZTN—D. D. Niven, 4 Laurie Street, Mount Gambier.
VK6NM—N. Martinsons, 166 Shaftesbury Avenue, Bedford Park.
VK6SE—R. M. Elliott, West Australian Missionary College, Carmel.
VK6TJ—A. C. Gray, 205 Townsend Road, Subiaco.
VK6ZB—C. H. Baker, 21 Hoven Crescent, City Beach.
VK7ZMK—M. J. Knott, 6 Aberdeen Street, Gebe.
VK7ZVJ—Mrs. A. Jenner, 3 School Road, Geveeston.
VK9AL—R. A. Freese, Commonwealth Office of Works, Hostel 425/3, Rabaul, T.P.N.G.

APRIL, 1965
VK2DT—A. R. Harrison, 61 The Drive, Concord West.
VK2UN—G. Welch, 6 Bradley Avenue, Bellevue Hill.
VK2UX—G. A. Tippet, "Karloo," Kincumber Road, Green Point.
VK2AAY—R. P. Jones, 20a Carter Street, Lismore.
VK2ZD—D. Parker, 9 Balacava Road, Eastwood.
VK2ZMB—B. R. Mitchell, 13 Scarborough Street, Kogarah.
VK2ZRT—R. M. Bondi, 103 Edinburgh Road, Castlereg.
VK3ABR—D. H. Jenkin, 22 Monash Street, Box Hill.

VK3AKS—R. K. Smyth, 256 Moreland Road, Brunswick.
VK3ANI—K. A. Nicholls, 591 Riversdale Road, Surrey Hills.
VK3AT—A. E. West, 111 Court Street, Brighton Beach.
VK3ZPP—R. G. Gordon, Tennyson, via Prairies.
VK4ZBV—J. J. Hayden, 151 Maygar Street, Windsor.
VK4ZCA—J. J. Chappel, D'Agular, Queensland.
VK4ZTV—W. Baker, 33 Crummond Street, Wilston.
VK4ZKB—K. E. Ballantyne, Postal: 16 Army Light Aircraft Sqn. R.A.A.F., Amberley Station; Hanbury Street, North Bundaberg.
VK4ZRE—R. A. Everingham, 30 Hunter Street, Everton Park, Brisbane.
VK4ZRF—G. R. Flodine, School Road, Rochdale.
VK4ZTV—T. W. Vierz, 44 Silverster Street, Windsor, Brisbane.
VK5DR—R. C. G. Jackson, 19 Park Road, Kensington Park.
VK5VG—G. G. V. Griffin, Christian Brothers' College, 21 Walsfield Street, Brisbane.
VK5ZDW—D. K. Wallace, 112 Stephen Terrace, Gilberton.
VK5ZKG—K. W. Gooley, 4 Ormonde Avenue, Millswood.
VK5ZHK—K. Searle, 96 East Avenue, Clarence Cliff.
VK5ZOP—N. I. Smith, 5 Marine Parade, Seal Cliff.
VK6US—E. F. Wirtz, 70 Howes Crescent, Dianella.
VK6ZFX—T. J. Broom, 2 Armada Street, Bayswater.
VK7ZBL—B. Kelly, 29 Park Street, Wynyard.
VK7ZMW—M. A. Wood, Walton Street, Huonville.
VK7ZPD—P. R. Dowde, 77 Talbot Road, Launceston.

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S.W.L.

Sub-Editor, Chas. Abernethy, WIA-12211,
30 Urunga Parade, Miranda, N.S.W.

This month you will no doubt notice that our section has been reduced somewhat in size. The problem of space brought this about. I have been compelled to abridge, and delete portion of the notes that appeared in the past. With this in mind I shall report items, such as the DX ladder, which will only appear four times a year.

Congratulations to each member of the various States who gained awards in the 1964 R.D. contest.

S.S.B. To read a station on s.s.b. by the injection method, the station should first be tuned in on normal a.m. position. Then switch in the b.f.o., and adjust it until the signal has a normal quality and understanding. This may mean that the sensitivity of r.f. gain must be reduced since many a.s.b. stations are very powerful. A few times at practice and the operator will soon learn the best technique for him to use.

NEW SOUTH WALES

With the increased attendance at our May general meeting we feel that the lapse of which our committee complained was just a period that most of our experience was put to time. We, with continued support, go ahead and organise to retain the interest of those who attend.

Arnold L2291. I trust by now that you have the information about the converter, if not let me know, and I shall place a request in the Bulletin.

Robert L2288. Very good on all your projects and a decent antenna should put you really in business.

Mac L2074. Your weekly comments are much appreciated. Latest card to hand DYFOT.

Don L2022. I am very pleased to hear of your decision and many thanks for your letter at long last. Hope to meet you in the near future.

VICTORIA

The Victorian S.W.L. group wishes to thank the four people who have supplied us with classic and spare parts during the past few months. These were most welcome by the younger members. President Harry Roach has voiced alarm at the poor safety precautions on a lot of the equipment members are bringing along to the radio construction evenings, the use of more tag strips for the firmer mounting of components is also more important, remember, fellows, cover those leads with voltage on them. The group is considering the use of the Y.R. but more of this at future meetings. Our group extends congratulations to Peter Drew L6021 for winning the receiving section of the contest, and to Greg L2007 for his win in the VK3 section. It is interesting to note that VK3 had as many entrants as VK3 with only a quarter the membership that this division has. Jan L2006.

Greg L1318. Thanks for those QTH's, they will be very handy, and keep me going for some time. QSL's received, VK0, 9M2, KX6, VK9, HCL.

Warwick L2211. That radio/study timetable seems quite a good idea. Pleased to hear that you had some good DX, and received cards from VS9, EF2, VK9 and LU3.

Erie L2042 has sent 340 reports for the first five months of the year to 50 countries, plus 454 S.L's from CQ, FK8, HMS, HL9, UA9, UHS, 8AE, UP2, KR/VQ, 4U1, 4EA, SA5 and 524. Heard, 1.8 Mcs., VK3MY, VK3YQ, 7 Mcs., 4U1, UT9, 9H1, 5B8, UOS, 14 Mcs., QHT, UQ2, DIA, UA2, DU1, UBS, KL7 and JA1/MM.

QUEENSLAND

At the moment 3.5 Mcs. is very good for local work in interstate, with quite a marked increase in s.s.b. ops. on that frequency. On 21 Mcs. the JA's are plentiful with good spasmodic openings to the States. Afton L2136/VK4.

Aften L2136/VK4. Thanks for the information on the vertical, I will use it when time permits. I am sure that you will be a profitable one. Hope to catch up with you on 52 Mcs. later this year.

SOUTH AUSTRALIA

Alan L5085. I trust that you managed a replacement for the tube in question. O.K. re those cards, very good indeed, and thanks for the offer. Latest QSL's to hand, OD5, TI2, FK8, VK8, WA3, and heard TQ7, W's, JA's and ZL's.

WESTERN AUSTRALIA

Bryan L6028. Sorry re the mix up with those numbers, all now under control. Suggest that you place an ad. in "A.R." re that v.h.f. receiver. Logged during the month, W8, KT, VES, 9U3, JA0, VES, KH9, LA1, UA1, HA2 and TF3.

Allan L6029. Heard on 20 metres, CT1, UA2, SM2, W0, YV5 and VF2, whilst on 15 metres, Z55, JA8 and GM3.

Geoff L5030. Sorry to hear of DX conditions at your QTH. Additions to log for the month, HK1, XE1, ZD8, KH6, TQ7, WA4, CR5, 9J2 and VU2.

TASMANIA

Very good openings on the 15 metre band between 1000 and 1700 east, with W's strongest around 1300 hrs. 20 metres dead after 1800, but quite lively during daylight hours.

Greg Johnson. Many thanks for the circuit of the converter, which has been copied and offered to our members. Heard BV1, CR7, PO8, G3, HL9, HPI, JA's, KP4, UA1, CM8, VQ3, VES, W's, XE1, ZEA, 9M4, ZS5, YV5, etc.

GENERAL

VK3AHO is to be CR8AE shortly, no details to hand as yet, but it is to be a DX-pedition. Eric L3042.

Alan Jones, 29 Little Green Lane, Chertsey, Surrey, England, would like to hear from VK S.W.L.

For the card swappers, Joe Serbek, Z3 Clark St., Torrington, Connecticut, U.S.A.; Yasushi Takeda, 19 Kita 9 Bancho, Sendai, Japan; Norman Parks, 740 N Belforte Ave., Oak Park, Illinois, U.S.A.; Tetuo Ikari, 188 Imazucho, Jyoto, Osaka-City, Japan.

There was quite a fall off in the mail during last month as a number of my regular reporters failed to pen me of their doings. I trust that this is only temporary, and they will once again appear in the August issue. Well, chaps, that's it for now, so cheer, but remember, if you are always left where they are left, but they are always left where they are found?

S.W.L. DX LADDER

	Countries		Zones		W
	Cont.	Hrd.	Cont.	Sts.	
E. Westbrook	285	293	49	50	
P. Drew	165	155	38	36	
A. Westbrook	102	159	34	11	
M. Hilliard	92	241	33	14	
M. Cox	89	225	33	23	
G. Zar	87	165	33	14	
L. James	83	181	32	15	
R. Kearney	80	148	32	7	
W. Smith	78	153	29	7	
N. Harrison	62	181	32	38	
A. Raftery	33	154	21	9	
R. Harrison	30	70	17	1	
B. Prosser	17	136	8	3	
B. Mackintosh	15	58	15	3	
T. Corbin	12	34	9	—	

Wireless Institute of Australia

Victorian Division

A.O.C.P. CLASS

commences

MONDAY, 2nd AUG., 1965

Theory is held on Monday evenings, and Morse and Regulations on Thursday evenings from 8 to 10 p.m.

Persons desirous of being enrolled should communicate with—
Secretary W.I.A., Victorian Division
P.O. Box 36, East Melbourne
(phone: 4-2535) 10 a.m. to 3 p.m.), or the Class Manager on either of the above evenings.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

INVENTOR OF SUPERHET

Editor, "A.R." Dear Sir,—How much longer is "A.R." going to keep stating that Armstrong was the inventor of the superheterodyne? Twice recently this inaccurate statement has been seen in the pages of "A.R." Can we get it correct? The facts are: The patent of Armstrong is 6 months behind that of Schottky of Germany.

Schottky was 12 months behind Levy of France. In the 1920's a law suit involving Armstrong and Levy and the superheterodyne was decided in favour of Levy by the U.S. Court.

If you could print this letter it may help to clear up the wrong impression created.

—Norman Burton.

THAT WORD "WE"

Editor, "A.R." Dear Sir,—I have noticed recently that many chaps when on the air use the personal pronoun "we" when they mean "I".

The fraternity is reminded, therefore, that the only Amateurs entitled to use "we" are those who:

(a) Are Siamese twins; (b) are pregnant; (c) have tapeworm.

Unhappily, this is not original! VK5EK. ["We" are not amused.—The Editor.]

"I-AM"

Editor, "A.R." Dear Sir,—America's 260,000 Amateur radio "Hams" were honoured on December 15 with the issue of a 50¢ stamp.

The stamp was issued on the 50th anniversary of the American Radio Relay League, an organisation almost as old as radio itself. The designation "I-AM" for the Amateur radio operator, however, is older than the League and there is an interesting story behind this word.

In 1909 one of the first Amateur radio stations operated under the call letters "H-A-M." his word was a composite of the first letter of the surnames of the three Amateurs who operated the station at Harvard-Alford Hyman, Bob Almy and Peigie Murray.

When properly edited and threatened to destroy Amateur radio Albert Hyman came to Washington to testify and to defend his station "H-A-M." As a result the word "I-AM" came to mean all Amateur radio operators.

—Stamp News, April 1, 1965, Page 28.

☆

Publications Committee Reports That . . .

Inward correspondence from VK's: 4WF, 4SS, SEK, 3AVU, 2ZTM, D. Priestley, N. Burton, J. K. Haseldine and Rev. Bro. P. L. Ellis has been published in this issue or acknowledged. Technical articles were received from: VK's: 2ZRL, 5TH, 3ZCK, 3AK and 3ZFS up to the last mail on 14th June, 1965. It was nice to note that many correspondents followed the suggestions requested in the June issue of "A.R." this is most gratifying and it is hoped that this co-operation will increase, to everyone's benefit.

Due to the non-arrival of the N.S.W. Bulletin the members were unable to print the prediction chart this month. However, regular publication can be anticipated in future issues.

Readers will note the altered front cover design and we invite comments, as it is our intention to amend the layout; consequently various designs will be tried during the next few months.

The Committee generally discussed the layout of the magazine and several ideas have been put forward; these will be adopted over the next few issues and we trust will improve "A.R."

All Amateurs are requested to promptly notify the P.M.G. and "A.R." of the change of address, as the next edition of the Call Book will shortly be in preparation, hence if your current address in the Call Book is incorrect then this amendment should be notified as soon as possible.

HE

Out of the mid-winter gloom arrived an interesting note from KEMQCG, WEDNG, who made a moonbounce, is looking for sched's with VK stations on 144 or 432 Mcs. He is available every day of the year between 0030-1330 G.M.T. Any interested Amateur may contact either KEMQCG or WEDNG for further details. WEDNG's frequency is 144.662. Here is an opportunity for some enterprising Amateur or group to make a worthwhile contribution to Amateur radio by joining with WEDNG in this venture.

Following the lead of VK5, VK6, it is reported in the VK2 V.H.F. Newsletter that ZL is investigating the possibility of setting up beacons on 2 M. It is also reported NZART has requested technicians be allowed to use 0 M, but was refused because NZ has signed agreements with the I.T.U.—more required below 2 M.

Wonder how many Amateurs followed the progress of the recent U.S. space journey. Haven't heard a whisper as to what frequencies are in use—close secret perhaps. It is a pity that we cannot use the signals—excellent training for Oscar. Anyone know what frequencies are in use?

Hope all correspondents will remember the new requirements when forwarding their notes from now on. Refer to P. 4, "A.R.G.P." June for further details.

NEW SOUTH WALES

The forthcoming events in VK2 for July and August are the usual lecture at the July meeting which is on the first Friday evening, 8 p.m., at Wireless Institute Centre, 14 Aichison St., Chippendale, N.S.W. The lecture on the combined transmitting antenna for Channels 7 and 10. Instead of the 6 metre fox hunt on 7th July there will be a combined discussion on the 6 metre mobile and portable operation. The 6 metre hunt on the 11th and the 2 metre on 12th July. The 2 metre hunt on 13th July. The v.h.f. section to the Remembrance Day Contest. The same as last year with the rules almost the same as the h.f. section. The only major difference being that a station may be reworked once an hour has passed, the scoring is based on local population zones. The group committee suggest that other States may hold their own event. From next year a v.h.f. section should be included with the general contest.

Little is known about the activity round the State at the moment, in the operation of ZBB and some of the locals are converting taxi phones to 6 metres. At Orange, Brian ZBZX has been working back to Sydney on 2 M. To help the group keep in touch with the country operators, David ZVZW has been appointed liaison between the city and country and would welcome reports and information.

The subject of calling frequencies for 6 and 2 metres has been raised and at the last committee meeting it was decided that such a move should be done on a nation-wide scale rather than by States. The request has been passed on to the Federal Councillor ZA9Q.

Early this year ZL3AAR paid a visit to VK. He has since sent a request for some information re the setting up and operation of beacon stations. Anyone who could help should write to John as I expect that they would have been going to Sydney via the Post Office. His address is John Miller ZL3AAR, 95 Paparua St., Christchurch, New Zealand.

It is odd the number of times and places that you can meet other Amateurs. During a recent trip to VK4, Brian ZAND stopped for 10 minutes at the post office in Gunnedah, and while there was greeted by the ZL3A who was also in town for about 10 minutes. Both are Sydney Amateurs, and of all the towns in VK2 to pick each other would the odds of their meeting have been?

Operators on 146 Mcs. taxi phones in this State have suffered some interference from the sound channel of Channel 10. This has been overcome by using a different frequency on the receiver. An article on this appeared in the June V.H.F. Newsletter of which some spare copies remain. (14 Aichison St., Crow's Nest.)

Some activity is starting up on Channel A 144.854.

Some signals from Channel 0 Waggas have been received in Sydney during May. The DX season should prove interesting.

SOUTH AUSTRALIA

Activity in VK3 at the present time has resumed the usual Christmas level, regardless of winter elements, which tend to keep Amateurs firmly entrenched front of the "modulated ice bottle" and radiators at this time of the year.

Current interest on 6 M. at the moment is centred on a mobile net on 32.04. At the present time approximately 15 stations are actively engaged on this frequency. Caustic comment has been emphatically voiced by those normally operating in this band, however, due to the availability of large numbers of crystals on this frequency, the establishment of a net frequency was deemed necessary regardless of the frequency. Due to the insistent comment regarding the choice of this frequency, an alternative net is being considered on 52.7. Whatever the conditions associated with the selection of frequencies may unfold, the asset of such a net has so far seen the mobiles increase in numbers in a very short period. Mobiles are always assured of air space, which was not always the case previously.

Two M. activity has also increased in intensity, with outlying stations in excess of 100 miles from Adelaide providing the main source of activity. Sunday, 23rd May, saw the 2 M. scramble with Bob ZL2ZL at the result was fan 51Z past the post in No. 1 position, hotly pursued by Edwin ZSZ and ZSDX sharing No. 2. Nine stations participated in some manner or form, which resulted in much discussion relating to future scrambles.

On 432 Mcs. Amateur T.V. appears to be the only occupant. Of particular interest is the "Colour Television" transmissions being conducted by VK3ZEY. The system being used is the 3-colour revolving disc synchronously rotated at transmitting and receiving points. Excellent results have been

achieved so far with minor complications and future experiments may provide many points of interest.

13s VK5ZHJ.

WESTERN AUSTRALIA

The fox hunt on 22nd May was good fun. It was away out in one of the new northern suburbs, and upon arrival there was no trouble in finding the fox. It was a beam hung by string from a branch of a tree. The fox was in the VW right underneath—57V in person. Supper was at Brian Pemberton's place only we were not given directions. There was another TX going about 2 Kcs. away and if you followed this you got back to supper. Unfortunately a couple of cars found supper first and had to get the TX subdued before they could hear the second. Graham G2DO and another ham named Spider got themselves lost in a marsh. They followed the telegraph poles until they got bogged. A May-day call on 6 sent a couple of cars their way and fortunately they managed to extricate the Austin A40 in time.

Supper was served by Mrs. Pemberton. Some cream puffs met a sad fate when they were dropped on the carpet. However, the carpet is now O.K. Brian told some interesting tales of life in the Air Force and I went home happy.

Graham G2DB had his Gf Cortina out on the fox hunt and said it took the corrugations very nicely at 50, or was it 70?

New calls heard are Glen G2PH, Igor G2FG and Cyril G2BG. S.B.s. cannot be used on Igor as he persists in calling it d.s.b. but it is not a difficulty as he has only got a transistor receiver which was not made for invasion by a b.f.o.

Wally G2AA has returned from two weeks in the east (states, not oriental) and is making up another 2 metre converter with a surplus of E88CC's he acquired. Andrew G2CN is making a big power supply to run a pair of 4 x 50 B's in sideband on 2 m.x. I understand he is going to use d.s.b. with inverted audio to make tuning easier. Have you noticed the way 700s are being plugged in the ads? They must be trying to develop a market for them.

73, G2AG.

CRYSTAL DIVISION

Manufacturers of Quartz Crystals for Frequency Control and Crystal Filters for highly selective circuits in the largest and most modern crystal plant in the southern hemisphere announce a new range of—

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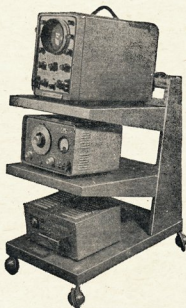
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The unit is made to standard order in grey hammertone finish metal, with rubber-tyred castors. Another 'Trimax' design feature is the provision for the fitting of 3 Mains Sockets in a parallel position, thus allowing mains-operated equipment to be supplied by one extension lead.



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L.M. 27

By Phil Williams VK5NN.

Before my departure for Melbourne at Easter time for the Federal Convention it was suggested that VK3 should be writing about the absence of s.b. notes in "A.R." so with left arm in pain following the twisting, your new scribe volunteered to try the other hand at writing the column until such time as the material dries up.

Here in Australia the use of commercial equipment is gaining quite a number of adherents, there are still many VK Amateurs who wish to build their own, and it is to help these chaps that this column will be written. It can be carried on for a few years along these lines then the objectives will have been achieved.

Before proceeding too far I should like to make a request for data and news of all sorts, dealing with single-sideband techniques, construction and operation. Most evenings when I am at home I shall be on 20 metres, near the high frequency end of the band, on s.b. at about 10.30 p.m. E.A.S.T. time, to pick up snippets of news and information, which should reach me by about the end of the month for inclusion in next month's "A.R." Of course, if you would care to write to me and include diagrams and photographs even, I should be very pleased to incorporate the gem in the column. This applies more, of course, to "A.R." and "A.R." and for fledgling constructional articles, which, if they cover side-band gear, will be well received by the Editor.

There must be many little tips about getting the s.b. station on the air and working, not only to the editor's satisfaction, but also the satisfaction of other Amateurs, and I should like to hear about the doubts of newcomers to the s.b. world, and any fledgling difficulties may disappear before they arise—in much the same way as the well-known Irish footballer Blarney, who was asked to "Get out there and equalise before the other team scores!" The topics I have in mind to cover are:

- (1) Methods of phasing type exciters, and towards this end, these notes will conclude with a description of a simple and effective audio filter, to go in the 2000 ohm output circuit of the usual audio amplifier.
- (2) The design and operation of linear amplifiers for the DX hounds who want to get out and work hundreds of countries—so that they may still remain popular with their nearest Amateur neighbours.
- (3) Tips on transceivers and using them mobile—and there must be hundreds of ideas in this field worth passing on to others.
- (4) The use of s.b. on v.h.f.—with the advent of long distance record chasing, moonbounce, and the Oscar satellites, there is an immense interest in v.h.f. and the v.h.f. group is conducting a series of technical meetings dealing with 2-metre sideband, and I have no doubt but that a report some of their doings shortly.
- (5) Reviews of commercial equipment—not with a view to extolling its virtues, but to let people know what the particular item is and what it is supposed to do. Perhaps I should say right here and now that I do not sell any radio equipment and have no pecuniary interest in the equipment reviewed. As an electrical engineer with the Electricity Trust in S.A., I leave that side of things to others.

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To conclude these notes I thought it might help some of those with simple phasing exciters to have a design for a low-pass audio filter to reduce the output of the audio amplifier to negligible proportions above 3000 cycles. One of the worst features of the phasing exciter is its audio amplifier which gives out frequencies well above 3000 cycles, and above 3000 cycles, but oscilloscope tests have shown that the phase shifting network on only one of the two outputs gives a degree relative shift between 300 and 3000 cycles per second. The other frequencies result in the sort of hash and splatter which make one unpopular.

Fig. 1 shows the circuit of the filter and the recommended position for its insertion in between the audio output transformer and the resistance divider network supplying the 7.2 voltage ratio signal to the audio phasing network. It will be noted that with the resistances shown the ratio 1650/470 ohms, using one per cent. tolerance resistors gives the correct voltages without having to use a potentiometer between them for adjustment, and eliminates one more thing which can be mal-adjusted to give poor signals.

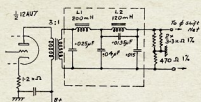


Fig. 1-3 Kc. Low Pass Audio Filter.

The load on the transformer through the filter is (1650 plus 470 ohms) 2120 ohms, which when stepped up by the 3:1 transformer provides a load of 19,000 ohms to the half-2AU7 triode amplifier, and this is quite good for the output level required from it.

The condensers used in the filter are values which may be built up quite easily from small paper, mica or small plastic film capacitors. Mine were 200 volt rating paper condensers of small dimensions.

The easiest way for the home constructor to make filter inductances of the values required is to obtain suitable ferrite pot-cores or cup-cores. It is easy to get these in large audiotypes, look up the technical data for the number of turns per millihenry, and remembering that inductance is proportional to the square of the turns, figure the turns required.

As an example I purchased some Philips cup-cores type K3.001.07 which require 32 T. per mH. To find the turns, simply take the square root of 300 mH, which is about 17, multiply this by 32, which gives 450 turns for L1. Likewise for L2 which is 120 mH, the square root of 120 is about 11, and 11 x 32 gives 352 turns.

Winding the coils by hand, using 36 gauge hard enamelled wire on the end of a screwdriver handle, and using the correct size of the cups (or on the correct formers which sometimes come with the cores), then adding a little more than 2 V. to the voltage to the leads, took about five minutes each.

Checking the filter with an audio oscillator showed the amplifier response to be level to about 2.7 Kcs. with quite dramatic drop in excess of 30 db. at 3.2 Kcs.

Similar filters have been built using home-made windings on Rola filter choke cores, but it is only fair to point out that these are not quite as high-Q as the ferrite cores.

Next month's s.b. column will deal with the frequencies below 300 cycles, and a few other tricks in the audio section of the exciter. B, Phil 5NN.



Increasing popularity of the "DX-Pedition of the Month" programme, as evidenced by the increase in number QSL cards received during the past six months, now necessitates a change in procedure for submitting QSL's for confirmation.

Beginning April 15, 1963, QSL cards received from all W.K. stations should be accompanied by a S.A.S.E. (self addressed, stamped envelope. All other stations (outside the U.S.A.) should send airmail, with a self addressed envelope. (Stamps or I.R.C.'s not required.)

Since "DX-Pedition of the Month" is now handling the QSL-ing for over 35 different stations, and we anticipate the continued addition of new stations, it is hoped that this will help to confirm QSO's more quickly and accurately. By initiating this plan, we expect to reduce the delay in getting your QSL's into the mail.

Our policy concerning cards received via QSL bureaus still remain the same. All such cards are confirmed by way of the appropriate bureau.

—Stan Meyer, W2GHK, P.O. Box 7383, G.P.O. New York, N.Y. 10001.

This column has Correspondent's Syndrome this month—scarcity of letters bringing news. There is an open invitation for not only State Supervisors but also Club Leaders and others to send me items from anywhere. The space available is not used to favour anybody—the biggest volume of news is the volume of news, wherever it comes from. VK2 usually leads but others are welcome to match them.

Two "Quotes of the Month" are worthy of special note. The first is an eminently sensible one from our Federal President—urge Supervisors to have their functions limited to only just starting, to give this aspect of institute activities every assistance possible, for recruits in this field will eventually make itself felt in added membership apart from the better public relations it creates." I would add to the President's thoughts, but also large organisation, such as the W.I.A., which is in a position, without strain on itself and even with a prospect of added strength, to render service of value to young people and to the nation, should eagerly provide that service. My second quote, without comment, is from Division Notes, "but then isn't VK3 always ahead of things?"

I had a talk on the air with two club leaders who were naturally a bit disturbed that their clubs had started well but had declined in membership. This is quite common, and I think it should be noted that if our clubs fall off, there is no need to worry about it. It's the nature of the young-adult who has no bias, but also quite commonly to change their interests suddenly, usually many times. The majority of clubs I have known went up and down periodically in membership quite frequently. The consistently increasing number of clubs and numbers of Y.R.S. shows that you Club leaders are doing it right. I should add the fact that you are, by any impersonal standards, providing a most valuable opportunity for young people to take an interest calmly as your successes except perhaps to sharpen up your publicity and re-examine your methods.

It is highly desirable to have a uniform Federal policy on the aims of Y.R.S., and in my regard, I think it is NOT an aim of the Y.R.S. to compel all members to concentrate on Amateur Radio. Such pressure would drive away the vast majority of people away. Because most Club Leaders are enthusiastic about Amateur Radio, that enthusiasm will probably be communicated, but our aim is to give the Y.R.S. a broad base. We should provide training in any branch of Electronics (as far as we can): (i) to help Science teachers get a general idea of the absorbing hobby which may keep youngsters on a sensible course of behaviour; (ii) to help them evaluate career in Electronics. The fascinations of Amateur Radio can be used fully, of course, to keep them working along. Any Club Leader who has not read Form S.A. may find it by sending S.A. applied in stamps to Bro. D. L. Kinsella, St. Edmund's School for Blind Boys, Wahroonga, N.S.W.

Would anybody at all in other Divisions please take great interest in the promise of confirmation of the new Sydney Teachers' College Radio Club? The prime target should be the senior Science Teacher at every "B" or "C" school. The Secretary of the S.T.C. Club, has received the Station Call-Sign VK2ZTC.

Mr. Knowles, Overseas Telecommunications Commission Training Officer in Sydney, is interested in the new Sydney Teachers' College Radio Club? The prime target should be the senior Science Teacher at every "B" or "C" school. The Secretary of the S.T.C. Club, has received the Station Call-Sign VK2ZTC.

State Supervisors are asked to investigate whether a Y.R.S. Lapel Badge would be popular—perhaps a similar one to the W.I.A. Badge but a different colour. Please advise Rex VY2A with a rough numerical estimate.

Roger Davis (IRD) formerly of Lynham High and now at University, has been authorised to give an organisation on the air—reference a candidate for the S.T.T. W.T. onwards, and to sign the test requirements. An R.T. Certificate (Grade 3) has been earned by Andrew Davis, his brother, still 15. There is no favoritism here—Andrew is a very experienced operator. Ken 1KM.



FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL

MEETINGS OF F.E.

15th March. It was resolved to change the Federal QSL Bureau address from Box 2811W, G.P.O. Melbourne, to 23 Lansdowne Street, Box Hill, for the purposes of overseas countries and to save double handed cards. It was also agreed that a draft letter should be prepared dealing with reciprocal licensing rights between the U.S.A. and Australia. This letter to be sent to the P.M.G.'s Department, requesting that matter to be taken up with the appropriate U.S.A. Dept. Final arrangements for the Eastern Convention were made, and Secretary was directed to ask all Federal Councilors for further agenda items. It was agreed that the Federal letter should be redesigned and this was left to the Business Manager to arrange.

30th March. This was a special meeting to finalise Convention arrangements and the business was restricted to sorting agenda papers and detailed preparations for the Convention dinner. The Treasurer notified FE that he wished to retire this year but would carry on until a new one was appointed.

25th April. This was the first meeting of the new Executive and the President, Max Hull, indicated for the benefit of the new members the tasks he believed should be carried out by each member. He pointed out that the new Communications Secretary, Bill Mitchell, would prepare the new Handbook for the Guidance of Federal Officers as his major task for the year. It was resolved to accept the A.R.L.'s offer of handling subscriptions to QST and the A.R.R.L. and the Business Manager, Al Seadman, undertook to administer the proposal and keep the necessary records. The Chairman indicated that the pressing business was the preparation of the minutes of the last meeting and reciprocal licensing with the U.S.A. through the Department of External Affairs. It was proposed also that the minutes of the last meeting review a particular section of the Handbook for the Guidance of Operators in the Amateur Service, this review to be complete by the next meeting. It was resolved to make a presentation of a pen to the retiring Secretary and Treasurer, the new Secretary to arrange.

F.E. APPOINTMENTS FOR 1965-66

It is regretted that some confusion may have arisen of the notifications of the new Executive appointments that appeared in the last issue of A.R.L. There were differences between those shown in the Comment and Federal Notes. It is advised that the correct appointments are as shown under Federal Notes. It is pointed out that there appears to be some doubt on the appointment of the new Federal Contest Manager, Mr. Rumble, as advised from the VK3J Councillor was nominated for the post but due to other commitments Mr. Rumble may not be able to accept. Action is in hand to immediately straighten out this appointment and further advice will be given in the next issue.

JAMBOREE CARDS FROM VK3VIA

Amateurs awaiting cards for contacts with VK3VIA at Rowville during the recent Jamboree will be pleased to hear that cards have now been printed and have in most cases, been forwarded through the QSL Bureau to those who made QSO's. All cards should have been sent during the past month.

SILENT KEY

It is with deep regret that we record the passing of:
VK2LE—F. H. S. Lee.
VK3ZC—W. B. V. Cahill.
VK3ZD—D. J. Ashcroft.

CONVENTION MINUTES

The minutes of the Eastern Convention have been completed, drafted and checked. Before this issue has been circulated, the minutes should be in the hands of the typist and issued to Divisions before the end of this month.

R.D. CONTEST RULES

Some slight changes will be noted in the 1965 rules for this popular Contest. A special section has been incorporated, as the result of a former convention, to include Z call licenses. Although the entries from Z calls for this year's contest will have no bearing on the final result, it may give an indication of the interest in such a section, and in how it might be best to include them in future contests.

FEDERAL QSL BUREAU

QSL's for QED Amateurs may now be sent to Box 1, Maribaham, Finland.

Results of the 5th All Asian DX Contest are now to hand. The following excerpts may interest VK hams: Continental Winners (Multi Band): SPERC 2,777; 1200, DL7AA 7,998; SOEEN 2,277; WASBSO 7,004; KGAAAY, 10,428.

Continental Leaders (Single Band): 3.5 Mc.—UWWSW 1,512; OK-MG 44; WASLU 8, VK5LD 4; 7 Mc.—JA1XF 1,210; OHZBHR 380; W6OAR 780; FYVIA 110; VK4SS 33; 14 Mc.—UWWSW 20,795; OH1GF 1,031; W4R 1,025; F2N2 130; DU1GF 1,890; 21 Mc.—4X4M 3,090; OK1GT 133; VK3QV 120; 28 Mc.—JA1HG 6.

DX Contest: 1200, DL7AA 7,998; 3.5 Mc.—UWWSW 1,512; OK-MG 44; WASLU 8, VK5LD 4; 7 Mc.—JA1XF 1,210; OHZBHR 380; W6OAR 780; FYVIA 110; VK4SS 33; 14 Mc.—UWWSW 20,795; OH1GF 1,031; W4R 1,025; F2N2 130; DU1GF 1,890; 21 Mc.—4X4M 3,090; OK1GT 133; VK3QV 120; 28 Mc.—JA1HG 6.

K8MFG, associate of WEDNG, who made moonbounce contact on 2 metres with HH1NL last year, advises that WEDNG now wants a steed with VLF or 432 Mcs. He is presently reading on 144 and is available 0300Z through 1300Z, every day of the year on 144.092 Kc. Write either of above.

A DXpedition to the Aland Islands will be made by OH2AM from July 18 to 27, 1965.

Operation on frequencies: 5.8-3.790, 7070, 14.13, 14.240, 14.250, 14.31, 3900, 7000, 14.690, 21.040, 24 hours' operation daily.

Equipment: TX FL 100B plus PA, RX FR 100 B by Sommerkamp G.m.b.H., W. Germany. Antennae: TH3 3 Element Beam 10/15/20 Inverted Vee 40/60.

QSL via Jack, W2CTN, Amityville, N.Y.

Operators: Martin OH2BH, Art OH2BP, Mark OH2BS, Ray OH2SB.

—Ray Jones, KK3RJ, Manager.

NEW SOUTH WALES

The Council is now up to full strength of seven with the vacancies being filled by John VK1ZB/2 and Frank VK2ACQ. John is in Sydney with an army posting for a couple of years. The following notes are being written by Tim VK2ZTX.

An attendance of 50 at the May general meeting heard an interesting lecture of "Whistlers" by Joe VK1JR. The vote of thanks was moved by Phil Zelah, MB2CP, a visitor at the meeting. The lecture for July will be on "The Sid" by Stan 2EL, who has transmitters and Stan 2EL with the transmitter sets. Don't forget the fourth Friday at Wireless Institute Centre H. 12CJ.

President, Ivan VK2AM, during a recent holiday to VK4 met with Laurie VK4ZGL and the VK4 President, who sends his greetings to the Division. On his way home Ivan attended the annual meeting of the Far Northern club at Lismore. On the invitation of the President, Fred VK2FP, Ivan spoke to the meeting on divisional activities.

For those who believe the h.f. bands are demand driven, the h.f. bands are being handled by the bureau for May. The only way to keep the numbers up is to work on all possible bands and to keep the hands to send your two dollars to the L.F.U. fund. VK1 Division is dragging the chain this time

—refer page 23, June "A.R."—then send your money to the Divisional Secretary, 14 Achison Street.

There are now four official call signs used by the VK2 Division. VK2AW is used by the Divisional station at Durai. The broadcast is carried out at 11 every Sunday morning on 3895 Kcs, 7146 Kcs, 53,296 Mcs, and 145.13 Mcs. VK2AWI is the portable call sign of the Division. This is the call used with the motor training (every night at 7.30 p.m. on 350 Kcs). VK2AWI is the h.f. and T.V. Group call signs used by their broadcasts and activities. VK2AWX is the call sign of the Hunter Branch. Their broadcast is at 7 p.m. on Monday evening. It contains the main points of the Divisional broadcast from the day before and their own local news. The frequencies are 1815 Kcs, and 3895 Kcs, and 700 Kcs, of the Division, relay from Newcastle. The station is at the West-lakes Radio Club, Terahia.

With a shortage of disposal items being released on to the market the Divisional Disposal section has been carrying an ever-increasing range of new components. Sales are good which seems to indicate that members prefer these items to the disposal range.

In May a publication was released by the Divisional Disposal section. It is called "The Disposal Guide." It consists of a form of hints and tips and the first sub-edition contains articles on the various items which are available in the terstate bulletins and also the 1/2 of the letter. The price of the sub-edition is 10/- and the enquiries should be addressed to "Handbook," 14 Achison St., Crow's Nest, 22TM.

HUNTER BRANCH

The June meeting of the branch was held at the home of Keith, a VK2 member of the staff of "Electronics Australia," who gave a most informative lecture on proposed equipment to be featured in the magazine. The large gathering of 45 members, sponsors and visitors listened attentively while Keith described the Amateur Band Ten and the Single Band Ten. The latter was a very interesting piece of equipment caused many eyebrows to be raised and such was the interest shown that even technical notes were taken. The meeting was a vote of thanks, the would-be builders lingered and piled the lecturer with questions. During the course of the lecture, Keith also informed the members of several frightening facts about electric shock and fibrillation of the heart muscles—so now nobody even thinks about getting anywhere near the a.c. Apparently 6 volts at 11 micro-amps is all that is required to immobilise the heart if applied to the chest. The member, always to work on equipment with one hand in the pocket or behind the back, and swing to safety.

During the month a group from the most active Cessnock Radio Club visited the West-lakes Radio Club and exchanged ideas. Chris, VK2, was the guest speaker and discussed the activities of the Cessnock boys, it was to be complimented on the interest he has aroused in the electronics hobby, and we wish him well in the licence race. A very curious method Chris uses with the boys is to give them a receiver which is working with the instruction to make the receiver better, to modify and rebuild it. This pays off and boys, so practised at this art, become very familiar with the internal parts of a receiver.

Those who are used to visiting the office of Frank, our friendly Radio Inspector, amid the relays and selectors of the Wolfe Street telephone exchange, will be better off to come again looking for information. The District Office has been moved to a most salubrious location in the new post office building in House, Hunter Street West. Those beautiful Eddystone receivers and that most pleasant of operators, who have the time to complete staff have taken up residence in Suite 5, 4th Floor, at 741 Hunter Street. It sounds rather like a late night film address, fresh from the U.S.A. but you can be assured that they are there in fact.

Some of the more mobile-minded members have been having trouble with their exotic equipment for use in the cars and the results of all this have been nothing short of miraculous. It has been the demonstration of a well-named duck-talking machine only this week and succeeded in raising several DX stations while parked in the driveway. To this you can be assured that I think that within the next 10 years or so

VICTORIA

VK3 Council met on 24th May. The first matter attended to was the annual "docking" session. The result gave the following:

President: K. E. Pincott, VK3AFJ.
Vice-President: J. B. Battick, VK3OR.
Vice-President and Fed. Councillor: M. J. Ewen, VK3ZEO.
Treasurer: K. Rogel, VK3YQ.
Librarian: R. Henderson, VK3ARY.
Editor, "A.R.": M. Cocking, VK3ZFO.
Asst. Ed. "A.R.": K. E. Pincott, VK3AFJ.
QSL Inwards: E. Treblecock, L3042.
QSL Outwards: Stafford, VK3JX.
Class Instructors: J. R. Lancaster, VK3ATP.
C. N. Pickering, VK3JUP.
Correspondence: K. J. Prichard, VK3JUL.
Course Inst.: D. P. Finson, VK3JF.
Transmitting Officer: P. E. Linden, VK3JBX.
Disposals Committee:
J. B. Battick, VK3OR.
J. L. Kelleher, VK3JAL.
J. W. Spicer, VK3ZEL.
L. C. Fowler, VK3ZGF.
A. J. Taylor, VK3ZJF.
Education Officer: J. K. Matchett, VK3TL.
Broadcast Committee:
W. E. Roper, VK3ARZ.
J. P. Downie, VK3APF.
P. E. Linden, VK3JBX.
C. B. Edmonds, VK3JAE.
H. E. Hunter, VK3ZGP.
W.I.C.E.N. Co-ordinator:
J. B. Battick, VK3OR.
M. J. Owen, VK3ZEO.
W.I.C.E.N. State Controller: H. L. Hepburn, VK3DQ.
W.I.C.E.N. Tech. Co-ord.: J. W. Spicer, VK3ZEL.
Y.R.C. Equip. Officer: V. Barnes, VK3OT.
Property Officers:
J. L. Kelleher, VK3JAL.
T. J. Cuthbertson, VK3ZJQ.
T.V.I. Committee:
W. M. Rice, VK3APF.
G. Farthing, VK3JAB.
J. A. Taylor, VK3ZJF.

Other matters discussed included improved lighting in the rooms, space for F.E. records, publicity for meetings and non-return of library books.
The June General Meeting was held on 2nd June. Ron Henderson kept a full house enthralled for over an hour when he spoke on Astronomy. He showed one of his telescopes and some excellent photographs. The interest in this subject was amply shown by the number of questions asked.
Next month Syd. Clarke VK3ASC will describe and demonstrate equipment shortly to be available to Australian Amateurs. To whet appetites he produced an HR0500, continuous coverage, 10 Mc. to 30 Mc. for its first Australian showing. As Syd said, when he followed the previous speaker he was also on astronomy. Just have a look at the price, £1212/10/- for one Rx. I have his assurance that his demonstration next month will include equipment more in the reach of the Amateur pocket. So come along next month. The date, 7th July, place 478 Victoria Parade, East Melbourne.

WESTERN ZONE

The Wednesday evening zone hook-up has been suffering from the vagaries of 80 metre propagation during the past few weeks but now seems to be coming back to average.

Bert 3EP and Herb 3XN are still the most regular, with 3AKW when shifts allow and the farmers when they aren't out on their tractors.

As usual there is no news of world-shaking importance. Ray 3ATN is certainly the greatest deer in the zone at present with 432 Mc. signals going vast distances in all directions. Ray also has a very potent signal on 160.

We have a good number of stations on the zone hook-up recently for the first time in quite a while. Roy 3AOS is busy reconstructing various antennas on top of his 75-foot tower. He will have skeleton slots on 2, both vertically and horizontally polarised for a.m. and f.m.

OBITUARY

FRANK LEE, VK5LE

Frank Lee, VK5LE, of Aveoa Beach, N.S.W. died on May 20 at the age of 73 after a lengthy illness. He received his Amateur licence in 1928 and his commercial operator's licence in 1933. He spent 25 years in New Guinea as a wireless operator and engineer and was on the last boat to leave New Guinea at the beginning of the Japanese invasion. In fact he intercepted the Japanese which advised this was to happen and for this was specially mentioned in despatches. He was survived by a wife and daughter and we wish to extend our condolences to them.

WILLIAM BENJAMIN VINCENT CARILL (VK5VC)

The N.S.W. Division in particular, and the Amateur Radio movement generally, have lost another keen supporter in the death of Vince Carill (VK5VC), who, we regret to report, passed away suddenly on May 26.

Although not active in Institute affairs in later years, Vince will be remembered very well as one of those who interested themselves in the building of the transmitter site for VK4WV at Mt. Saddle. This work was carried out by voluntary labour, and Vince was responsible for the installation of the electrical wiring at the station.

At about the same period he was a Councillor under the chairmanship of the late Jim Corbin, VK2YX, and also filled the position of Secretary-Treasurer. The Divisional Council was represented at the funeral at Woronora Cemetery on Friday, May 28, by one of the Councillors, Mr. Chas. Wilkins, VK2ALB, and there were no fewer than several other members in attendance.

Vince is survived by his mother and four brothers, and all members of the Division join with their many friends, in offering them our condolences in their tragic loss. VK5AIM.

Paul Goldsborough, of Gosford, now has his licence and his call sign is VK5AVX. He passed his examinations several months ago but was unable to proceed until he got to see boys like Paul coming into the club and we are looking forward to more.

At our last meeting we had a visit from David Grauman, KT9QL, of Tucson, Arizona. David is a young medical student anxious for a look at Australia and has fitted out a Landrover for a three months' tour of Australia visiting Pt. Augusta, Alice Springs, Darwin, Mt. Isa, and the east coast—and all places in between. He has a KW2M on board and will be operating under the call sign of VK5AVX as well as a Flying Doctor call sign of 8N1L. He is due back in the Sydney area around the end of August but in the meantime he is looking for a place to live. He will also be working his father, KTRJK, back in Tucson. So this will be an interesting trip on the follow-up. David has been a guest of Doug Pearall, VK2ASA while in the Gosford district.

Frank Pearson, VK2ACQ, now of Umina, has been elected to the W.I.A. Council and we wish to congratulate Frank on this honour received.

The club meets on the third Friday of each month at the School of Arts, Mann Street, Gosford. Visitors are always welcome and are interested to hear from any itinerate people who may be heading north for a winter holiday. 73, VK2AXS.

BAND ALLOCATIONS

C.w. Only	C.w. and Phone
Kc.	Kc.
3,500 - 3,535	3,535 - 3,700
7,000 - 7,030	7,030 - 7,150
14,000 - 14,100	14,100 - 14,350
21,000 - 21,150	21,150 - 21,450
28,000 - 28,200	28,200 - 29,700



TO SAFETY

I will be able to save up enough to be able to pay the deposit on one of these versatile rigs. Jim 2AHT also is in the race and has a well-equipped mobile station with which he can speak to the world while on the move.

Because of the recent field activity, the two-metre band is carefully monitored in the "Amateur's Guide" has proved a popular product with young and old alike. All who buy a new rig or gear are interested and simple to make. All the details are in the publication mentioned, together with many articles reprinted from various divisional bulletins. The book is available for one dollar and full details are available from the Divisional Secretary.

Preparations are well in hand for the Spring Field Day of the branch which will be held over the long week-end in October, so it may pay to get all the cobwebs blown out of the equipment which you propose to use. Pedestrian hunts are the done thing at the present and plenty can be achieved with the most elementary equipment.

Who said that it is impossible to work DX on C.w. while mobile? Harold 2AHA has proved this to be true and he has been on C.w. contacts with the bare prefixes while on the way to work. Perhaps the traffic is too heavy to do so on the way home but Harold among them on the way to work of the journey. By the way, this activity is undertaken with home-built gear which is great credit to the engineering staff. It is having some fine results from the recently completed mobile. This uses switched crystals and the signal is very good. One of these he is able to choose all the best frequencies on 40.

One of our members, David 2BSC, recently received a message from some of the broadcast types in ZL outlining the signals sent up to the licence to warn that a programme was about to commence. If you want a good laugh at the community of engineers to write electronic parodies on popular songs, you should hear this one.

The big clothes-line (in fact, a folded dipole on 160 metres) is now in operation at the 2AWX transmitter. This has been done to improve the field strength on top band and by which will report to you just that. Evidently you who would try to emulate those brave Terahz tree-climbers, take note—a span of some 170 feet is required for the exercise.

Henry Schroeder is the latest branch member to apply for his Z call and by all reports he is busily practising on the 2-metre band to be ready to take the call. Fred Overvill, the flying Dutchman, will not be far behind him in the scramble for Z calls on two metres. Anyway, did you know that Fred's small daughter sings a well-known ditty to the words "My Old Man's a Dutchman"—which is a new angle, to say the least.

I suppose that nobody has forgotten that the dreaded tax man would like a long letter from each of us very soon, so please don't give this all your attention and forget that the July meeting of the branch will be held in Room 6, Clegg Building, Newcastle Technical College, on the 28th of June, at 7.30 p.m. on the first Friday in July, which is the 2nd. All the details of the meeting will be given in the broadcast. It is the 11th, 28th and 7th of July at 7 p.m. each Monday night. I hope you'll be able to come so I'll see you then.

73, 2AXX.

CENTRAL COAST AMATEUR RADIO CLUB NEWS

The regular monthly meeting of the Central Coast Amateur Radio Club was held on Friday, May 21. Twenty-seven amateurs and associates attended and all had a most interesting evening. The speaker was Phil Levenspiel, VK3TX, who explained the basic principles of using a slide rule in clear and concise form. He had a giant demonstration model of a slide rule which was big enough for one to observe what he was doing. It is rather amazing that the slide rule can be used for a multitude of different jobs from working out monetary estimates to complicated formulae connected with refrigeration.

Geoff Mann, VK2XA, gave a short report on his trip to the Canberra Convention. He found it very interesting and enjoyable and stressed the importance of having confirmed accommodation.

Club members are very interested in Civil Defence and the most recent member to attend the school at Mt. Macedon, Victoria, is Gordon Proctor. The club realises the importance of this training for other emergencies besides national. Gosford is located on the Brisbane Water and recently two teenage boys had disappeared while sailing but the Civil Defence crew, which included some of our members, located them on Lion Island at the mouth of the Hawkesbury River.

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OTL/275

Roy and 3AFU, 3KT have been keeping the flag flying on 2 f.m. but 3AFU, 3KT had a power supply disintegration on 1 f.m. but set and at the moment are forced to operate on the ridiculous, as opposed to the sublime, bands.

160 metre signals are now very good. 3AFU/M copied 3ARZ, 3AKZ, 3NS, RS following the broadcast about 1000 Kc. on 6th June. We never hear zone stations on 40 and we haven't heard from the DX since the zone so we know nothing of any DX exploits.

Would any Amateur like to make a reasonable offer for one copy of "A.R." with SP8 on the cover? We go two "A.R.s" a month. We are willing to let one go to anyone who wants a glossy, unsigned SP8 No, not you Warwick, any other Amateur.

VK3KT, VK3AFU.

MOORABBIN AND DISTRICT RADIO CLUB

The Club's May General Meeting was a rather cool affair, in fact, so cool the members voted, in the absence of the Treasurer, to purchase two radiators, this should warm things up a bit. The meeting was quite well attended, considering the weather, with our visitors being made very welcome. This meeting was followed, on 4th June, with our usual nighter again. After nattering, Harold APQ kept all present reverend, explaining the rigging of a home-brew Sideband Exciter. Whilst on the subject of sideband it is interesting to note the incoming number of stations. This month, Members heard are BM, LC, LZ, ZE, ARD, SK, with quite a few ready to take the step. Ken ZNJ was heard at one stage but it is believed that the rig ended up in the river, or somewhere, we are just not quite certain of the facts. There is a very strong rumour that a certain fellow, very soon be re-appearing on two A.M. The power supply has now had the wires soldered together, see you in the next scramble. Hal, or will another Kidnapper be arranged? We have noticed that a few members have been appearing in the two metre scrambles, all the more the merrier. Eddie EM has been taking things very quietly of late, after celebrating the arrival of grandpuppyhood, he is now eligible for the baby sitting stake, all the best for the new generation. Ed. Bob ZRD has been on 2 A.M. again, after an absence of many months. And to top it all off, Lindsay ZNS has been heard again, after many months, on 2 A.M. Someone accused him of being a new call. Lindsay is about to join the ranks of the bearded types, some say, he has a cut-throat razor. He probably flogged it off to pay for his fare to the V.I.F. Convention at Mt. Gambier.

A number of v.h.f. types from the club intend to attend the Convention at Mt. Gambier. We will hear more about this on their return. Ken ZNJ has built himself a new modulator, guaranteed to 200% modulate, sorry Ken, we meant to type one hundred per cent. Just a slip of the key, it's my damaged finger. I injured it repairing my feedline, that stuff Jim KE sold me. Peter XKis pleased to announce that he has, for the moment anyway, managed to get rid of the bugs from his A.M. gear. It is operating again after an absence of many months. It is now sporting C.w. facilities, and that white elephant key harmonic Graeme purchased at the club sale has been bottled for the price of an ice pole, so watch out you key bashers. Stan ZE and Ted TG were heard that other night on eighty. Stan tells me they try and have a bit of a yarn on a Monday night, everyone is welcome to join in. Ted is living in the bush now, at Kyabram. Stan is a having a ball of a time on twenty, with beam trouble on fifteen preventing him from using this band. Another old-comer, the feedline is Wally AHZ. Wally used to be heard quite regularly on the Moorabbin Club Monday night net, but like a lot of others, other things which had to be done took priority. Wally is very active in the scouting movement, doing a sterling job.

Alf LC, now on sideband, is, in between shifts, heard regularly on 40 and 80. Another sideband member is Clive LZ, who is heard working a bit of DX and twenty. Jim KE was tackled the other night and accused of not getting airborne, at the moment he is rather water-logged, what with all those fish, he is beginning to look like one. At the moment of writing Jim tells me that his current problem is how to get rid of snails in his fish tanks. Easy Jim, just breed fish that eat snails. Jim's shack has been doing so when he gets the sunroom built, and those other jobs done, and the snails out of the way, we may be rewarded with that contact, from the QTH of Jim KE. Jim is a regular attendee at our meetings and was one of the founders of the club.

Way back in November, 1949, President J. Keenes KE, Treasurer E. Manifold EM and

Secretary E. Scott. As a matter of interest, the club subscription was 10/- per year and meetings were held at the Moorabbin Town Hall for quite some considerable period. The present subscription is £1 per year for juniors. Getting back to chit-chat, Val OT is still looking after his XYL in ward one and due to all ill-health his staff has not been heard as regularly on two F.M.

As mentioned in the notes last month, a Social Evening was held at the QTH of Eddie Les. As usual, an enjoyable evening was spent by all.

That is all for the month, and to round it up, for interested persons, the following is a list of Club Officers for 1983:

President: Col Anderson, VK3XV.
Vice-President: Ken Seddon, VK3ACS.
Secretary: Harold Hepburn, VK3AFQ.
Treasurer: Peter Hebard, VK3KX.
Public Relations: Ken Seddon, VK3ACS.
H.F. Transmitting Officer: Kevin Connelly, VKIARD.
Auditor: Ian Caporn, VK3AXC.
Committee: President, Vice-president, Secretary, Treasurer, Greg Earl, Bill Sievers, VK3CB, Bob Dorin VK3ZRD.

73, VK3KX.

QUEENSLAND

The monthly meeting of the Council of the Queensland Division of the Wireless Institute of Australia was held in the Social Service Rooms in Berwick Street, Varsity, Brisbane, on Thursday June 3, with a full attendance of councillors.

Laurie VK4JZD presided. David VK4DP reported on the Federal Council matters. Paul VK4VS was appointed as new councillor. Les VK4BS gave some interesting sidelights on the Bundaberg activities (Bundaberg being his old QTH).

The Queensland Sunshine State Contest this year has been extended to embrace V.H.F. and the pennant will be awarded to winners in all sections.

It is anticipated that news sessions on six metres for the Federal Council matters will shortly and this will be welcomed by the V.H.F. group.

VK4JZD to resume slow motion on 3504 Mcs. at 1930 hours on Mondays and Thursdays.

Plans are afoot to improve our publication, "Q.T.C." Much voluntary work goes into this effort and we wish those concerned every success with their efforts.

W.I.C.E.N. matters are proceeding slowly but certainly very surely and the foundations now being laid point to a very successful operation in Queensland.

Six new members were proposed for acceptance by the new members committee.

It is proposed to make eye-ball contact with some of the VK2 boys, in northern rivers of N.S.W., with a view to arranging an annual Banquet somewhere close to the border and the boys in VK4 are very keen for this.

The Ipswich and District Amateur Radio Club although not overstrong numerically certainly are a go-ahead group. They plan a 59-000 contest on 10 metres for the first week-end, and many of the boys will be mobile on 20 Mcs., the club's official net frequency.

Channel "G" up this way has quietened the six metre boys down a bit. Many of them are two metres, and a few are on 10 metres, and we expect a few more calls after the next exam.

Forty metre activity has picked up in VK4 this month. It is good to hear so many chaps on again. Twenty metres also quite lively, and plenty of DX available, but band spreading is a little better than in the way of personal notes this time chaps.

73's, Reg VK4VX.

BUNDABERG AMATEUR RADIO CLUB

Operation Tannum Sands. Our advance party travelled to Tannum Sands last week-end to meet members of the Central Queensland Branch on together they assessed the potential of the locality, and thoroughly "cased" the joint.

Our party consisted of Rusty, Roy, Steve and Eric, who report that the beach is beautiful, accommodation arranged, and the caravan party accompanied with all modern conveniences. The weather was brilliant, as reported by the Wide Bay members. Any further bookings contact Rusty VK4JM.

The Tannum Sands convention is really got the boys very busy around our QTH. Robert VK4ZRW has been heard testing a six metre rig—apparently a few bugs still evading him. The boys are up to the eyes in work a matter of time. A blue panel van with a 7 meg whip mounted, which resonates very well on 30 Mcs., is roaming around searching

the daylight out of everyone doing over 35 m.p.h. The designer of the rig is still trying to find out why? Mcs. comes out at 30 Mcs. I tell you this rig had the Youth Club lads all excited last Saturday when it appeared at the shack. They thought Scott McLeod of Space Angel fame had arrived. Then another motorist arrived, a 6 metre beam perched on top of a sedan car, the only thing missing was the identification marking XLS.

John VK4XC is busy putting the finishing touches to a 40 watt final for his six metre rig also.

An ex-club member and student, George VK4ZM has been back on the QTH of recent week-ends. George is at present doing a course with D.C.A. in Brisbane. Len VK4LL, another club member, is also completing a course in Rockhampton and is now staying at Calpaur, Biloela.

Those who attended last month's meeting really enjoyed the talk by one of our old club members, Les VK4XJ, on the producing of T.V. programmes, etc. Les is always easy to listen to, and we appreciated his visit very much.

Robert, VK4ZRW and Don are putting every effort into preparing themselves for the Morse test later this year. Every spare hour find them at the shack with key and oscillator busy.

Youth Club. Class is very keen and the lads have passed out on two parts of the course, crystal sets and continuity tester. Last week-end they were given a practical task and soldering the practical application.

The Youth Club urgently requires more parts for construction projects; parts needed are as follows: pieces of wire, 1000 ohm resistors, torch bulb holders, metal threads and nuts, fine wire for winding coils in ear pieces for short port project, and many more items. Let's all sort out our junk boxes and help these keen youngsters along.

SOUTH AUSTRALIA

The S.A. Division monthly meeting varied its nature again last month by calling on Gilbert, who had just returned from Japan, to show slides of his recent trip to Japan. This, in spite of a cold night, was moderately attended to provide a little with an attentive audience who were not only interested in the travelogue provided, but intrigued at his method of description. I don't know if Gilbert has noticed that the slides have shown a much more vivid picture of the scene than the pictures themselves. There were some slight instances of overexposure, but this would have formed the basis of "towns" for an array, but unfortunately there were no beams to be seen, and as Gilbert was on a tour with his camera, he was unable to get him to check up on the many JA boys he has been contacting freely in recent times. The subject are due to be held for a while time and for those who missed the meeting, it is advised that another one will be planned soon to enable him to cover Hong Kong, Manila and part of the trip. We also look forward to that.

The general business conducted was cleared fairly quickly. The only item in VK4 there is never any difficulty in clearing the agenda particularly when "volunteers" are required. Instantly, the Chairman in VK4 is able to get someone to take on the job of Associates Representative, when up jumps a young fellow and took the job, even without first enquiring if he intended to do so. This is a real sign of enthusiasm that makes this Division really function.

We were able to say farewell to John SXK, who attended the meeting on the day of his departure for U.K., where he will be looking into a lot of mysterious (to us) things for the up and coming power house at Forres Island. We wish him good fortune on the trip, and after talking to him, would not be surprised at anything he brings back with him. Whether for his trip or for his own, he has a few dates already made, one of which is with Rex SDO who is at present in U.K. with his XYL on the island.

The meeting concluded on an early hour (for us) and the question asked was why? It was not hard to answer for that great extender of debate, Les, Pansy SXK was not there, and it was interesting to note that the meeting and discussion can be concluded without him. A couple of times the chairman looked around the room for a couple of minutes, but in the way he really missed old Pansy and his quips. Anyway, unfortunately he will be back next month, and the meeting will be a much more assumed. Have not heard a whisper from the old so-and-so since he went away, not even an AM contact this year, so don't know what he has been up to. We will let you know next month and bring us up to date.

No doubt you all know Ken 3AFJ, who apart from being the blue-pencil on "A.R." (boy

have I suffered in that regard) has been on the receiving end of many a quip from Pansy, well now let it be nicely stated that he, Ken, has been appointed president of the VK4 Division, so from now on, if you wish to visit Rose, then he will have to be addressed as Mr. Ken and will be entitled to more than the usual courtesy of being referred to by Mrs. Congratulations, Ken, and pleased to be able to extend the hand of friendship before Pansy sails into you, as a pleasure for all concerned. Don't think of us as being bike-riding bandits out for your blood.

Had a note from Mount Gambier the other day, and news from that neck of the woods, wherein they complained of poor reception of the VK4 Sunday broadcast. Don't get me wrong, I am sure you will be able to take place which could improve your position, which includes the possibility of a night re-broadcast, which for distance may be the case. I am assured that the Council at that they are ever conscious of the needs of country members, so this matter is not being overlooked in current planning.

In a recent Sunday session announcer Geoff made a request to all men of the Division to let him have news to add to that he gets by mail. I am sure you will be interested to find that news does not always cover the whole of activities for the week, well, it's up to you to help in this regard. If you think you have something of interest to add, it's likely to hear about it, if you are doubtful whether Geoff may have picked it up, then drop him a line. It makes it only a little easier, and the session that much more interesting. It is "your" session, "your" Division, and it is up to you to let us know of us to contribute in whatever way we can.

Last year VK5 won the RD contest, now the Council is on to us to do it again. There is no reason why this should not be so, and we are sure that if you all work together, we can win your reading this that the Contest will be on again, get into the spirit and eliminate all those tedious and boring hours, and make it be off the air for even an hour last time, check everything you can to enable a trouble-free run for a duration. If you have a log sheet available (Uncle Tom has stacks of them for the asking) and then, finally, don't forget to put them in. Let's all make a special effort to place them in, and win the trophy for two years in a row.

Whilst Bob SOD is overseas the Youth Club has been looking after the club, and has been comprising John 5UL, who with Bruce 3OR and others will handle and expand youth activities. These activities are being run by the Council as a result of this action and will be pleased to have any enquiries directed to them. I.C.S. have donated a course of training for electronics and sold the trophy for two years in a row.

Quite a few Z boys recently completed their Morse and are now either on the DC bands or on the air. The Council in order to assist in this matter Council has obtained tapes for Morse practice, and is making them available to any member who would like them copied on to permanent residence there for this service, and any member seeking this service is asked to contact Geoff Taylor, of Clarence or the secretary through the usual channels.

The Sunday morning call-back on 80 has been quite a quiet affair, and in order to assist country members, although they do predominate, but quite a few out mobile or portable, the remarks from whom have proven very helpful. The Council has also obtained a band and the varying noise levels of different locations. Lance SXL at Clare very seldom has any trouble with his location, and he recommends that town for its quiet conditions, whilst 5LV portable at a location near Walkerie quoted no noise, and in consideration of the permanent residence there for that advantage. He was putting in a colossal signal in here to Gawler on that occasion so it was not surprising that he was not heard at Whyalas seems satisfied with his location also and never excuses for noise.

Clem 5WG in a recent contact described an excellent quiet location, and in order to assist was under water, and he was not sure whether to call it a "water plane" or not, it was something like the Larmer, E. Rapp and the others. The antenna was buried in the "image" was upstairs rather than the reverse, so maybe Clem has something in his new design.

Recent activities include a weak signal from Tom 5TL who obviously was getting through to most of the stations. He is a very good tenn, or maybe he has gone Responder these days—remember the old days, Tom, when all you could put off the air was the big station and the boys who were not interested in the lower bands for the more glamorous DX segments when his mighty quads get into operation, whilst Vern 5VB will be a competi-

for the same reason. The most recent conclusion of a task, and this time it is not on the bands, is one from the south, i.e., Kingston, where Bill VK3B has just completed the concreting around the house that had to wait whilst antennas, exciters, receivers had first claim. It is understood that it is now possible to walk around the place and view all the external evidence of Ham supremacy without getting the shoes dirty. Bill also advises that when Les 8UX puts his key down the lights tend to dim at his (Doug's) shack.

Up at the Centre things are moving along quite well, where 8ZCX has now become 84V, making Eugene's old walk-around be heard on the DC bands. Doug 8KK continues to be the voice of the Centre on most of the frequencies, and is out to give a contact on 2 for anyone trying to complete WAS on that band; by the way, he will do it on any of the modes you request, including a.s.b. Doug also advises that when Les 8UX puts his key down the lights tend to dim at his (Doug's) shack.

A recent visitor to Gawler, and not just passing through, but stopped off several times, was Cole 6CS, who came over from W.A. for the Lions' conference then up to New castle and back to VK5 and looked up a few of his friends. His car was fitted with a Swan 350 which enabled him to keep in touch with the boys whilst mobile.

Last month reference was made to the new three-element, semi-wide-spaced beam Les 8AX was building; yes, he's finished and according to Les the sunspot activity increased the day he put it into operation, for the 20 meter band sprung to life so much so that he will not acknowledge any report that is less than 20 over 9. A most successful installation that seems to have more DB's up front than the Commonwealth Bureau.

It would not be right for me to conclude the stand-in period without some reference to sidebands; yes, I've finished and Pansy who warned you that such would be your diet for two months, so if you will excuse me, Ken (see how polite one can get), we will get to it. I must acknowledge any report that is some of my last month's writing got through or not, for there is to be a sideband page soon, and I'll be interested to see references may have been deleted in anticipation.

Naturally you are "Getting with the strength" by going sideband, don't delay the destruction now when you will water on, so why not be in it right away. Last month I mentioned that 610 VK's were on this mode, well in the four weeks since then it has climbed to 625 and is still going, it is easy

to do and the problems are not great, the new a.b. correspondent will show you how. The main problem is getting rid of that half ton AM modular, but then if you are like me, you will keep it and have all modes available for the time.

An interesting item, the details of which may be announced soon, is a project being undertaken by Ken 5KC, and simultaneously by AI 5MF who will be producing an a.s.b. transmitter similar to the Brynmor box, but will have everything, Vox, antiox, AALC, AVC, S. meter and so on, might even include a Bar-2Q and by that means change from SPS to go a.s.b. Yes, there you are, Pansy, it will be small enough to put on your bike, so that you will be able to go mobile with the rest of the elite. Anyway, it would be a lot better than the method you use now. What do I mean? The method of turning the transmitter on and off by means of a knob looking switch that you use with your hand or foot, absolutely no use mobile. Thanks for reading this far, fellows, next month you will have the old headsache back so won't have to be bashed by my ramblings. See you on one or other of the bands; a.s.b., of course.

73, Comps VK5EF.

TASMANIA

News seems very scarce indeed this month, still I expect the editor will be pleased if nobody else.

Our June General Meeting was very well attended with close to 80 members and several visitors present. Strange, it is not the business of moving the date, but the fact that the lecture or what-have-you that follows. An auction of donated equipment followed this meeting and so another 20 odd pounds were added to the Memorial Clubroom Fund. A raffle at the meeting yielded nearly £4 for the same C.R. fund, and this was won by "Lucky Chalk".

Ray (7TR) has now gone sideband with a "Swan," and several other members are fast becoming converts to this mode. I think the biggest a.s.b. nets in VK7 so far, if memory serves me correctly, about 15 stations took part. I must admit a couple of a.m. stations in the p.m. but I am not sure how many there will be this time next year.

Victor King Seven Ear Basher has been, and still is, on the sick list, and is at present on long service leave. We all wish you a speedy and complete recovery Ted, and on your behalf may I invite friends to visit you to help him with the monotonous work. Ted has is not contagious cough, so no need to worry on that score.

Brian (7TX) was "voted" V.H.F. Group Sec. at the recent V.H.F. Group annual meeting, and most other positions were filled by younger members of the Zone, which I think is very good indeed, as this, and similar small groups make excellent training grounds, not only for meeting procedure and decorum, but also public speaking and so on.

Congratulations to Bob (VKZ ex-7ZBK) on getting his C.W. and also to Mike (7ZMC) on getting the licence ticket.

Ted you there was not much news this month, let's hope Ian (7TZ) can find a bit more next time when he deputises for me. 73's, Geoff (7ZAS).

NORTH-WEST ZONE

Once again there was a very good roll-out to our monthly meeting here, where several members present who listened very attentively to Winston VK7ZWN give an illustrated lecture on v.h.f. mobile equipment.

He had some very well-built mobile equipment which I believe was built by Reg 7ZAO and it works fine business. So start getting those mobile rigs, and if you can't afford there won't be that rush on the first field day.

Reg, incidentally, is looking for any parts which may be of use to him, and if you find anything which could be of use, bring it along to the next meeting.

For any of you DX boys, Basil VE9AP is now on a.s.b. on 30 metres and is looking for N.W. contacts. Cheers for now.

73, DE VK7KH.

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